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A Practical Study of Some of the Problems of Minor Oral Surgery*

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The object of this paper is not to introduce anything especially new or heretofore unknown, but merely to give the readers the benefit of a few practical methods that have proved helpful to the writer.

There is no branch of dentistry which monopolizes the wholesome respect of the patient more than minor oral surgery. Patients will permit the dentist to do almost anything he wishes in the line of prosthesis, but when it comes to extraction or anything of a surgical nature, they always have to become acquainted with the reasons as well as the ways and means for the operation. "Is it going to hurt?" is only one of the many questions that we are called on to answer. They take it for granted that there will be some pain during cavity preparations and so steel themselves for what is considered the inevitable. But suggest surgery, from the simplest extraction to a complex laparotomy, and they immediately wish to be devoid of all and any unpleasant sensation during the operation.

Many general practitioners would like to eliminate all cases requiring surgery—and some do—but there always have been and will continue to be operative procedures that are difficult to avoid. Therefore it is well for all of us to be able to give our patients the best service possible when we are confronted with surgery that is not desired. If this paper contributes anything toward making the road a little smoother, its purpose will have been served.

Diagnosis

Of course, the first and most important thing to be considered is diagnosis. Each patient generally has some definite complaint, either local or general. There may be some pain in or about the mouth and head or some systemic disorder which the patient suspects may be due to oral disease. At any rate, it is up to the dentist to acquaint himself with the pathology, if any, which exists in the patient's mouth. Then advice should be given relative to the operative procedure necessary

* Read before the Eighth District Dental Society, Saginaw, Michigan, March 2, 1927.

to eliminate the mouth as a causative factor of local irritation or general disturbance. This is merely our duty, and if our diagnosis is given and the patient does not heed the advice, at least our consciences will be clear.

The first thing that should be done is to examine carefully all of the mucous membranes of the mouth and tongue. In the great majority of cases we shall find nothing but normal epithelium, but occasionally we discover (1) leukoplakia, (2) luetic lesions, (3) fistulous openings, (4) epules, (5) cysts, (6) greatly enlarged tonsils, and many other abnormalities of form and structure.

Next the teeth and peridental tissues should be examined for gingival irritation and caries. Prophylaxis will be indicated in most cases. All sharp edges should be rounded off. It is essential to determine whether or not all the teeth are present, and, if not, whether they have been removed or may possibly be unerupted. We should always be suspicious of large crowns, large fillings, and teeth known to have dead pulps, even with our own patients. Digital examination is of extreme value in oral diagnosis.

Radiographic Examination

All this brings us to the consideration of radiology, which is the greatest adjunct to diagnosis that has befallen dentistry and medicine in recent years. The writer has heard it remarked that too many teeth have been radiographed unnecessarily, but it is our opinion that too few mouths have had the advantage of radiographic examination. It is true that the radiogram is not infallible, but it does remain as our greatest single agent in oral diagnosis and, if properly used in collaboration with other methods, will prove invaluable and practically indispensable in every case. In simple extractions where radiograms are not available, we should be very careful to explore the alveolar socket to determine postoperatively whether the bone is normal or will become normal by virtue of the extraction.

All patients who are seen because of somatic disturbances should have a complete oral radiographic examination not only of the tooth-bearing areas but of the edentulous spaces as well. It is just as essential to know whether the patient has any residual infection following earlier extractions, or whether he has a root or impaction, as it is to know about the tissue surrounding the tooth. Incisors and occasionally other teeth which on gross inspection appear of good color and normal are frequently found to be involved apically, due to some trauma which may or may not be remembered by the patient.

All patients having headaches not attributable to optical diseases and especially obscure pains referred to remote branches of the fifth

nerve should have complete oral radiographic examinations for the purpose of locating possible unerupted teeth and infections.

Mention has been made of the value of radiograms in edentulous mouths. If one were merely to make the exposures without any thought of marking the films as they were exposed, it would be rather difficult to determine after development which areas the films represented. This is due to the fact that the landmarks which the teeth ordinarily present would be lacking and the location of the areas of bone would be difficult. To minimize this trouble, the writer uses a pair of scissors and a pencil and paper to advantage. For illustration, let us imagine that we have just taken a film of the maxillary molar area. Before so doing we have analyzed the situation and determined the number and position of the films to be taken. We then mark out on the piece of paper the films as they are to be taken, so that the drawing appears like a film mount that is to hold the exposed films; i.e., the upper rectangles are drawn out across the top from left to right, and the lowers across the bottom. We now take the film that has just been exposed and, before exposing another, use the scissors to cut off a very small corner of the film or make a small cut into the film at some definite place. We then turn to the diagram we have made and with the pencil mark the rectangle representing the maxillary left molar area in exactly the same place and manner used in cutting the film. This method is followed out in the maxillary left bicuspid film, except that the cut and marking will be just a little different or in a different relative position on the film. We now proceed all around the mouth in the same way, and when the films are developed and dried, they are mounted very readily without error upon reference to the diagram. If this plan is carried out, the unfortunate accident of looking on the left side for a root that holds forth on the right side will be avoided.

Unerupted teeth or residual roots can sometimes be located mesio-distally, or infero-superiorly, by using a known landmark on the film and measuring the distance from it to the root on a match-stick or an applicator. The measurement is then transferred from the film to the mouth, and the incision is made over the marked point.

Dental radiograms should be examined systematically so as to insure that no possibility of pathology is overlooked. The line around the tooth (lamina dura) should be completely traced and any breaks in its continuity attributable to abnormal destruction should be noted. After this has been done, one should notice whether the interproximal bone shows any recession, indicating gingival irritation. Then the crowns of the teeth are studied, for the purpose of finding caries. Next we look for pulp stones and faulty fillings. This is followed by an examination of all the bone to see if there are residual roots, residual

cysts or infections, and unerupted teeth. Films thoroughly examined in this manner are readily disposed of, with little chance of error.

If there is any question concerning an area which has been radiographed, one or more check-up films should be made at different angles. As a matter of fact, too much dependence should not be placed on one view. For this reason the writer uses between twenty and twenty-five films in conducting a complete radiographic examination of the average case.

Anesthesia

After the diagnosis has been made and a definite operative procedure has been decided upon, the question of anesthesia becomes paramount. What type of anesthetic shall be used? Shall it be general or local? The chief considerations, of course, are the patient and the operation to be performed. Many persons will want to have a general anesthetic and many will prefer local anesthesia, but the patient's choice should not prove to be the indication for one agent or the other. Discretion must be used and the best anesthetic adaptable to the conditions should be administered. (It is assumed that the patient has been examined and has no organic or functional diseases contra-indicating either type of anesthesia. Of course, if a general or a local has been eliminated as a possibility, the one remaining will have to be used to the best advantage.)

In view of the fact that most office anesthetics are local, but brief consideration will be given to general anesthesia. If the operative procedure is to be of long duration and the patient will not permit a local anesthetic to be used, he should be hospitalized, as the office is no place for a long general anesthetic, regardless of the agent. Proper preoperative precautions should be observed and the best place for a recovering patient is in a hospital. If the anesthetic time is short, as in simple extractions, opening of abscesses, etc., nitrous oxid can generally be administered in the office without danger. General anesthesia is indicated in children ten or eleven years of age or under. (No mention will be made of ether or ethylene, as they are primarily hospital anesthetics.)

Infiltration or nerve-block anesthesia will prove to be almost universally satisfactory, and if we use the proper amount of tact and gentleness, we can obtain the confidence of the patient and induce his cooperation.

At the present time there are a great many drugs that have more or less merit as local anesthetics and are being used with varying degrees of success. Most of the synthetic agents will undergo sterilization without serious decomposition, so in making a choice of anesthetic our chief considerations are toxicity and comparative efficiency. After

thorough study we should choose the safest and most efficient anesthetic and then stick to its use and not be swerved or cajoled into using some new unproved drug or preparation because vast claims are made for it by those whose chief aim is to sell it to the profession. Under no circumstances should we use a proprietary or trade anesthetic with which we are not acquainted. Authority for its use should come from some recognized institution with facilities for complete experimental observations.

Leo Winter, D.D.S., in his recently published text*, devotes considerable space to the comparative values of the known local anesthetic agents, and it is interesting to note the relative efficiencies and toxicities of the drugs in common use today. According to him, cocain, tropacocain, holocain, beta-eucain, stovain, alypin, isococain, apothesin, butyn, and tutocain are all markedly inferior to novocain as local anesthetics, because of either extreme toxicity or lesser efficiency. It is true that some of the above-mentioned drugs may have indications for their use, but they certainly are not in the field of oral surgery.

The chief rival to novocain for popular favor continues to be cocain, but its use is on the decline. Higgins, in his research, has discovered some interesting facts in connection with these two drugs. He notes that the tissues absorb cocain more slowly than novocain, and that some of his animals have gone into convulsions twenty-four hours or more after cocain was injected. He suggests that perhaps some of the untoward symptoms following operation under cocain are due to the cocain. In other words, even though no immediate signs of toxicity were in evidence at the time of injection, it is not impossible for delayed poisoning to occur.

Higgins notes also that injections of local anesthetics in the head and neck regions of animals are more toxic than those in other parts of the body, and that novocain is less toxic than cocain.

To quote Higgins: "While the results herewith mentioned are of scientific interest and record the results obtained from experiments on animals, yet the question of human safety must not be based solely on experimental figures. However, the large amounts of procain that have been injected into the human for major operations, without side actions or fatal results, would tend toward favoring procain as the least toxic, even in the human. One may consider the 'efficiency' of a local anesthetic as a prime factor and inject minimum amounts of a very toxic (experimentally) drug without producing side actions or fatal results. This, of course, is a matter of individual choice, but nevertheless one should not permit one's self to be dislodged from a defensive position."

* *A Textbook of Exodontia (Exodontia, Oral Surgery and Anesthesia).*

When the writer was first learning the technic for conductive anesthesia, he had the usual difficulty in locating the various nerve trunks to be blocked and through inexperience and ignorance insisted on continuous injection until anesthesia was produced. In one case 35 c.c. of a 2% novocain solution were used on the patient at one sitting without evident untoward signs. This procedure is not recommended for routine practice, but it does show, in a measure, the safety of novocain. There is no other anesthetic which we should care to use in repeating this experience.

Several years ago a committee of the American Medical Association was appointed to investigate the toxic effects of local anesthetics. The data accumulated by this committee, of which Dr. Emil Mayer was chairman, revealed that procain is the safest of the local anesthetics. Dr. Dunning, who was in charge of the Stomatological Section, received a report from one dental college which contained the record of 6,000 consecutive injections of procain without disturbance except for two hematomata, and of course these were caused by the mechanical rupture of small vessels, thus permitting the extravasation of blood into the tissue. This committee found also that it was not advisable to use more than one local anesthetic agent at a time, nor was it advisable to follow local anesthesia with a general, and that too much suprarenin is dangerous (best between .00002 and .00005 grams per c.c.).

If the foregoing is true, it is evident that procain or novocain is still the safest anesthetic; and until the time when it is superseded by a drug which is actually proved superior, it should be the anesthetic of choice.

No attempt to describe the technic of injection will be made in this paper because this subject has been very well covered in most dental journals, but a few suggestions will be considered.

An isotonic Ringer's solution is easily prepared by dissolving Ringer tablets in freshly distilled water. The operator should distil the water as it is needed, by the use of a still. The ordinary commercial distilled water should be condemned, but this, when redistilled, is satisfactory. The Ringer's solution is then placed in a Ringer flask and the flask boiled for at least fifteen minutes. This insures a sterile solution, in which the novocain can be dissolved. When needed for injection, the required amount of saline solution is poured into a porcelain boiling cup and the novocain added. One tablet to a cubic centimeter makes a 2% solution. The "E" tablet is generally used, as it contains .00005 grams of epinephrin, which aids in controlling local bleeding, thus giving a clear field for operation. Novocain without epinephrin is indicated in cases of high blood pressure, nephritis, and diabetes.

It is well for the operator to make up his own solution and not leave it to an assistant in order that he may know the condition of his

syringe, that no drug other than the novocain has entered the barrel, and that the agent is of the proper concentration.

One should have several syringes immersed in a mixture of 90% alcohol and 10% glycerin. In this way it is possible to leave each syringe submerged for a sufficient time to insure sterilization. When the syringe is placed in the alcohol, a small amount should be drawn up into the barrel and the plunger worked up and down a few times, thus bringing the alcohol into contact with all parts of the syringe. However, just before use the inside should be thoroughly washed out with sterile water or a small amount of the anesthetic, in order to eliminate the possibility of an unintentional alcohol injection.

Nickel needles should be used and should be changed frequently, as sharp points can be handled with less pain to the patient and there is less likelihood of breakage. Platinum needles are good, but are apt to be dull.

The surface to be injected should be dried and painted with iodin solution, or mercurochrome, and kept dry until the injection has been made. It is useless to attempt to sterilize a surface and then permit organism-bearing saliva to contaminate the area of perforation.

If the needle is sharp and the tissue drawn tight by stretching the membrane over the area of injection, very little pain will be experienced by the patient. Sometimes, if not always, a little conversation properly applied during the preparation and administration of the anesthetic will psychologically prepare the patient so that there will be no pain from the injection. (Precautions should be taken to prevent injection into chronically or acutely infected areas. Failure to observe this may produce considerable after-pain and inflammation.)

Slow injection (1 c.c.-15 sec.) will enable the operator to watch the patient and prevent the tissue from being traumatized by rapid distension. There will be lessened toxicity from slow evacuation of the syringe and less possibility of after-pain. In older patients slow injection cannot be overemphasized because of the possibility of high blood pressure, and a slightly more dilute solution may be advantageous. A sallow patient, over fifty, should be carefully observed during anesthetic administration and perhaps should be in a semi-reclining position during injection. However, all patients should be carefully observed immediately following the injection. If anemia begins to show by whitening lips or a general pallor, steps should be taken to lower the head immediately either by tipping back or by bending forward with the head between the knees. The usual restoratives, such as ammonia, should be convenient and their use, plus the lowering of the head, will generally prove successful.

In cases of absolute collapse artificial respiration may be necessary to help keep up the blood pressure. Higgins has shown that the use

of pituitary extract is of extreme value in total collapse. He recommends the use of ¾ c.c. of the extract intravenously. The action is more rapid than if it is administered subcutaneously. The drug acts directly on the muscle fiber and restores the blood pressure nearly to normal, even in cases where little, if any, artificial respiration is used.

Extractions

We shall avoid discussion of indications for extraction and merely consider the operative technic. Simple extractions can be taken care or by use of forceps only, but even the most simple extraction should not be considered lightly.

Cuspids and molars and occasionally other teeth, by virtue of devitalization, large radicular cysts, or in case of heavy buccal alveolar bone, are best taken care of by removing the outside bony plate. To do this, an incision running from the gingival margin toward the mucobuccal fold is made in the soft tissue at a point at least ¼ inch anterior to the tooth to be extracted. The muco-periosteum is then elevated in order to expose the buccal plate over the offending tooth as well as the bone over the tooth anteriorly situated. Chisels are now used and the bone over the tooth to be extracted is removed. It is then a comparatively simple matter to extract the tooth laterally by the aid of forceps. All spicula of bone should be removed and the edges rounded off, following this type of extraction, as in any other bone surgery or surgery of the mouth. Some instrument, preferably a curet, should be placed at the base of the alveolar socket in order to determine the amount of destruction of peridental tissue. This should be done following the simplest extraction, and if any organized infectious tissue is found, whether it be granuloma, cyst or otherwise, it should be gently removed and vigorous curettage of the normal bone avoided. After this has been done, the soft tissue is sutured back in place by means of small curved needles and dermal sutures. Catgut may be used and has the advantage of being absorbed, thus eliminating the necessity of removal. A short scratch mark on the soft tissue near the gum line and across the line of incision before it is made enables the tissue to be expeditiously approximated. The position of the original incision at a point away from the tooth prevents the collapse of the tissue into the socket. This method of extraction avoids excessive trauma and tissue destruction and in the majority of difficult cases much time is saved over other procedures.

In the removal of fractured roots access and vision are of paramount importance, therefore an application of the operation above described is sometimes of assistance. The soft tissue is retracted and large surgical burs are used to remove the buccal bone until the root can be seen. If bleeding interferes with proper vision of the residual

apex, a small cotton pack saturated with adrenalin chlorid and held firmly in the socket for a few moments will stop the hemorrhage and render the operative field dry. Gauze sponges held on the side of the tongue and cheek will keep out the saliva. Frequent sponging of the socket may be necessary. Small surgical burs may be used around the root to prepare a crevice into which small, grooved apico-elevators may be inserted. Wild use of elevators thrust into the bone in the forlorn hope that something will happen, and that the root fragment will pop out, merely causes excessive trauma and sometimes obscures the field so as to make succeeding attempts at extraction more difficult. Gentle, firm, and progressive technic with the sole object of gaining access and vision will cut down the operative time, lessen trauma, and save abundant nerve energy for the operator and the patient. Occasionally, with little vision, small tips can be dislodged by pushing apico-elevators along the peridental membrane. (When this is done in maxillary molar and bicuspid areas, extreme care should be taken to prevent the loss of a root in the antrum.) In these cases the bone-removal type of operation is unnecessary. Ordinary large fractured roots very seldom yield to this treatment, but can be taken care of with root forceps or elevators. A small mouth lamp conveying finely focussed rays of light to the operative field is sometimes of material assistance.

Following all extractions, loose spicula of bone should be removed, and if there is any fractured process which might become detached, it also should be removed. If several teeth are extracted at one sitting, precautions should be taken to prevent the transmission of infection from one socket to another during curettage. Again permit the writer to emphasize that curettage in dental surgery does not mean the scraping of bone, but merely the gentle removal of infectious material.

501 Second National Bank Building.

(*To be continued*)

American Arbitration Society

As the readers of THE DENTAL DIGEST may remember, there has been legally established in New York the American Arbitration Society, which provides a ready and inexpensive method of settling disputes. So great are its benefits that its activities are being constantly extended.

In April, 1927, the First District Dental Society and the Second District Dental Society of the State of New York adopted resolutions that an arbitration clause should be inserted in every written agreement between a dentist and a patient. In May of the same year the Association of Graduates of the Angle School of Orthodontia adopted a similar resolution.

This is a step of great importance to all dentists, for by its use the possibility of a lawsuit is prevented. Arbitration clauses are enforceable in New York, New Jersey, Massachusetts and Oregon, and have passed both houses of the legislature in Pennsylvania and California. In addition, the courts in the States of Washington and Colorado have by judicial interpretation ruled that such arbitration clauses are enforceable, despite the fact that their arbitration laws do not specifically provide for such enforcement. Several other States have similar laws under consideration.

The dentist should avoid lawsuits. They are costly both in time and in money and very often the attendant publicity is harmful. By arbitration all this is avoided. The hearings are held privately before an arbitrator who has the power of a court and may compel the presence of witnesses or any material evidence that is necessary. Each side tells its own story, and the arbitrator may ask whatever questions he wishes. He then gives his decision, and that decision is final. There can be no appeal, and the case is ended.

The disputants may agree on one arbitrator or each may select one, in which case the third may be appointed by the two already chosen, by the Arbitration Society or by the Supreme Court.

The American Arbitration Society is composed of prominent men and is not run for profit. It provides rooms at small cost for holding the hearings and has lists of men who will act as arbitrators without fee. These men are specialists in their respective lines and regard the work as a public duty. The Society is located at 342 Madison Avenue, New York, and will be glad to furnish any further information.

PERCY HOWE'S LETTERS
In Collaboration with "Brother Bill"

EIGHTH LETTER

Dr. Howe writes as to the effects of diet-deficiencies upon the growth of experimental animals.

My dear Doctor:

As we have now seen some of the effects of diet-deficiencies upon the pulp and the dentin of the teeth of experimental animals, it will be worth while to broaden our view a little and study the effects of diet-deficiencies upon the general growth of the body. It is not necessary for us to confuse ourselves with the terms *scurvy* and *rickets*

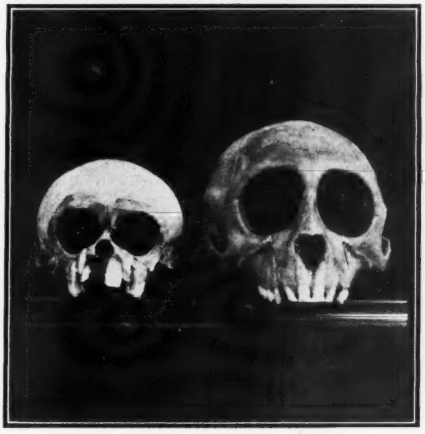

Fig. 23

On the left, the skull of a monkey on Vitamin-C-deficient diet for 23 months. On the right, the skull of a slightly younger monkey who had normal diet throughout life.

because, as dentists, we shall never know very much about them and serious attention to them may divert our thought from some things of greater practical value to us. It will be quite sufficient for our purposes if we deal merely with the effects of known deficiencies in the diet.

Fig. 23 shows a front view of the skulls of two monkeys of nearly the same age, the smaller being a little the older. Both were born wild in India, nursed by wild mothers, and brought to this country and to the experimental laboratories of The Forsyth Dental Infirmary. Both were placed for a time on the diet which we considered normal. Later

one of them was placed on a diet good in all respects except that it contained no Vitamin C. For twenty-three months this animal received only occasional small quantities of orange juice. At the end of that time he died suddenly in the cage.

Some one has said, "Happy is the nation that has no history," and perhaps that saying applies to monkeys also. Certainly there is not much to be said just yet about the monkey that was kept upon the normal diet, except that he developed normally in every way and lived a happy and apparently contented life. Some of the points of excellence in such an uneventful career will be appreciated when we come to study the other monkey.

The first effect of a deficiency-diet upon the second monkey was a retardation of skeletal and muscular development. All of his bones were tiny. There was no need of big muscles to move them, and no

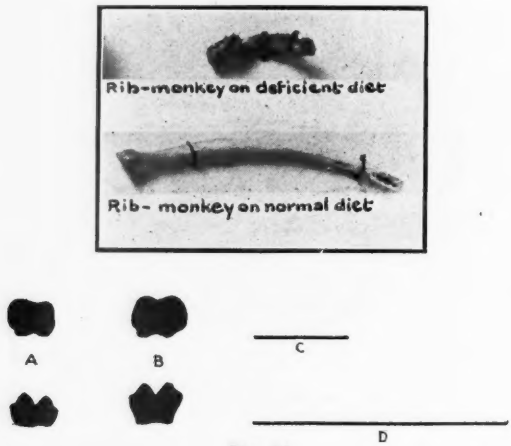

Fig. 24

Above—Photograph of a rib from the monkey on deficient diet whose skull is shown in Fig. 23, and of a similar rib from the monkey with normal growth.
Below—A, occlusal and buccal silhouettes of a molar from the monkey on deficient diet; B, similar plans of a similar molar from the normal monkey; C and D, comparative lengths of the ribs shown above.

room upon the bones to attach such muscles. Fig. 24 shows one of his ribs in comparison with a similar rib of the normal monkey.

Because we are dentists, we are naturally more interested in the development of the skull than in that of the rest of the body, and even more interested in the development of the face than of the cranium, although we shall do well to study both.

In beginning our comparative study of these two skulls we probably

notice first the relative size of the crania. This brings out a point to which Frederick Lester Stanton, D.D.S., has been calling attention in his lectures and writings—that before birth cranial development goes on rapidly and facial development slowly, while after birth cranial development goes on slowly and facial development rapidly. It should be noticed that while there is a great difference in size, the outline form is much alike in both skulls. Both monkeys were on normal diet long enough to develop the crania normally for quite a while after birth. One monkey got ample food continuously and his skull went on growing. The other monkey did not get the food necessary to go on building his skull and it stopped growing.

When we study the facial development in these two monkeys, we find quite a different picture. After birth facial development goes forward seven times as rapidly as cranial development. The younger of the two monkeys got enough food material, and his face developed in the usual manner and is vertically well proportioned to the size of

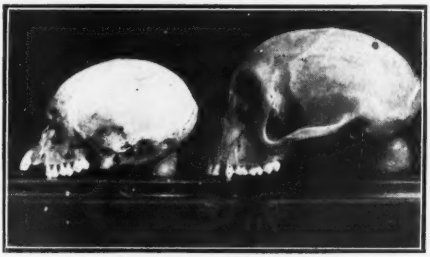

Fig. 25

Side views of the skulls shown in Fig. 23. Note the form of the basic occlusal curve and the projection of the upper centrals.

the cranium. The older monkey did not get the food, and the face did not develop normally and is disproportionately small.

If we now study the profile views of these skulls (Fig. 25), we find that in the younger skull the face grew not only downward but forward, out from under the cranium, in the manner required by what is considered to be normal development. In the older monkey the development of the face appears to have been arrested almost from the beginning of the deficient diet.

If you examine the facial portion of the normal skull as it is shown in Fig. 26, you will note that the bony framework of the nose and the inferior margins of the eye sockets have grown forward so that they are here visible in front of the supra-orbital ridges, while in the other

Fig. 26

Occipital view of the skulls in Fig. 23. Note the forward development of the entire face in the normal skull and the deficiency in the other.

skull only the alveolar border is visible, and this partly because of an unnatural tilting of the incisors, which is plainly seen in Fig. 25.

Fig. 27 shows views of the bases of the skulls and occlusal views of the maxillary dental arches. To make comparison of size easier, the skulls are here arranged with the ear holes on the same horizontal line. The significance to us of the growth forward of the face after birth now begins to become apparent, because the incisor point of the normal

Fig. 27

Occlusal view of the skulls shown in Fig. 23. The symmetrical retardation of cranial development is interesting but not so important to dentists as the asymmetrical and disproportionate facial and dental development.

skull has gone forward to a location which makes the development of a fine dental arch possible, with all the teeth in regular positions. In the other skull the incisor point has not moved forward anything like the same distance, the arch is small and the teeth are far back toward the throat.

Fig. 28, which is shown by the courtesy of Dr. Stanton, is a survey of the base of these two skulls. The solid line is the outline of the skull upon the normal diet. The dotted line is that of the skull upon the deficient diet. The retardation of cranial development is symmetrical and facial retardation is asymmetrical. The arrow, which has been added to make plainer the location of the maxillary incisor point in the retarded skull, shows that the incisor point of this skull

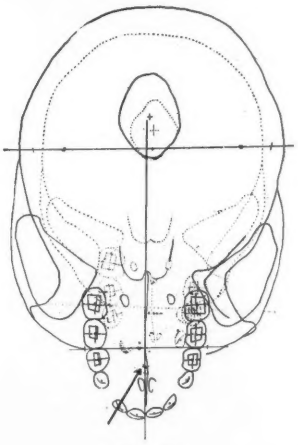

Fig. 28

Surveys of the bases of the two skulls shown in Fig. 23. The solid outline is that of the normal skull. The dotted outline is that of the retarded skull. The arrow shows the asymmetrical location of the incisor point. (Courtesy of Frederick Lester Stanton, D.D.S.)

is only a little anterior to the eye sockets in the normal skull and is not in the median line. It is very doubtful whether there would have been any room for the eruption of the permanent teeth in regular positions, and it may also well be doubted whether, if this were a child, orthodontic interference could be made to solve the problem entirely.

The fact that in the normal skull the line through the eye sockets is parallel to the line through the ears shows that development there was symmetrical, while the fact that the line through the eye sockets of the retarded skull is not parallel to the line through the ear holes shows that the development not only was retarded but was distorted.

It is of great importance to dental welfare, as well as to general

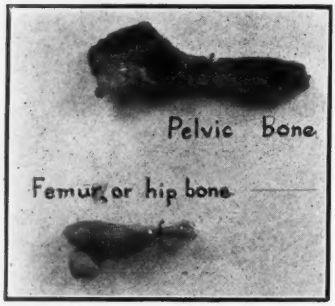

Fig. 29

Photograph of all that could be saved of the pelvic bone and the femur of the monkey on deficient diet whose skull was shown in Fig. 23.

bodily health, that a child should breathe easily and naturally through the nose. The development of the face in the younger of these two monkeys provided large posterior nares, through which the animal breathed easily. In the retarded skull the posterior nares were so very small that the animal could not breathe through them and he was, perforce, a mouth-breather.

Let us turn aside for a moment to note the comparative qualities of bone, not only in these skulls but throughout the bodies of these animals. In the normal skull the bone was of fine texture, and the teeth were firmly retained. There has been no difficulty in keeping them in place up to this time. In the other skull the bones of the entire body are of very poor quality.

Fig. 29 shows portions of the pelvic bone and of the femur from the smaller monkey. The head of the femur is nearly ready to break off because disintegration about the neck and the pelvic bone shows disintegration near the socket. The remaining portions of these bones broke down during the cleaning process.

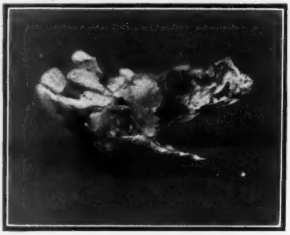

Fig. 30

All that could be saved of the mandible of the monkey on deficient diet. Bone degeneration was general throughout the body.

Fig. 30 shows all of the mandible from this monkey that could be saved when it was cleaned. The maxillary teeth were loosely held, so that in spite of the care that has been used a number of them have been lost.

Let us summarize what we have so far learned about these skulls, as follows:

Upon the normal diet one monkey developed all parts of the body normally, including the cranium and the face; upon the diet made deficient about a year and a half after birth the other monkey did not develop any part of the body up to the standard for his age. The retardation was very marked in the face, and there was some distortion.

Fig. 31*

Side view of the skull of a new-born infant. It shows that the cranial development before birth is proportionately greater than the facial development.

Fig. 31* is a side view of the skull of a new-born infant. The cranium is well developed and the face but little developed, so that the general effect is much like that of the smaller skull in Fig. 25. Fig. 32 is from a child with the deciduous dentition complete. Since birth the face has grown more rapidly than the cranium and has devel-

* From the *Atlas der Zahnheilkunde*, published by Julius Springer, Berlin.

Fig. 32

Between birth and the completion of the deciduous dentition facial development goes forward rapidly. It was this form of development that suffered most from the diet-deficiency in the monkey.

oped forward and downward to a position quite different from that which is occupied in Fig. 31. These changes correspond closely to the changes which occurred in the skull of the monkey upon normal diet. Thus far, then, monkeys and humans are alike—that at the time of birth cranial development is well advanced and facial development is

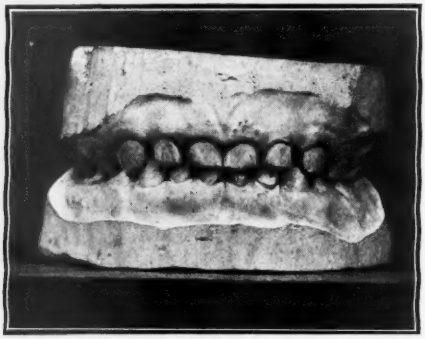

Fig. 33

Practically perfect arch development at the age of five years. (Courtesy of E. S. Ulsaver, D.D.S.)

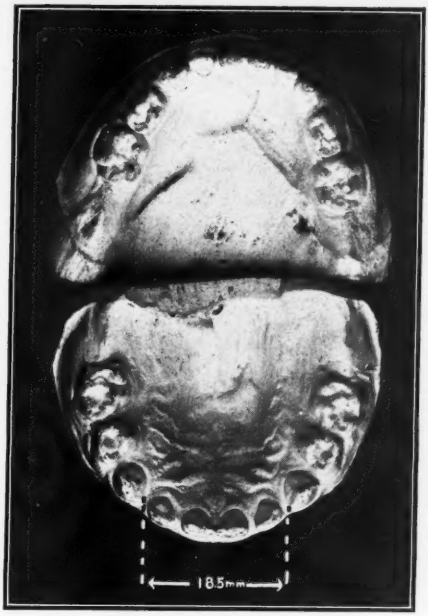

Fig. 34

Occlusal views of the arches shown in Fig. 33. The space between the mandibular cuspids provided sufficient room for the permanent incisors. (Courtesy of E. S. Ulsaver, D.D.S.)

Fig. 35

The boy whose arches are shown in Figs. 33-34. This picture, taken when the boy was 33 months old, shows spaces between the maxillary anteriors.

not, but after birth facial development goes on more rapidly than cranial development.

Perhaps we can learn something from living children that may throw light on some of the phases of facial development in which we are most actively interested. Figs. 33 and 34 show casts of the mandibular and maxillary arches of a child about five years old. He grew up under favorable conditions, was robust physically, and the deciduous anteriors of both arches voluntarily spread to make room for the permanent teeth. He was particularly straight of back and sturdy of chest. (Fig. 35.)

Fig. 36 shows the maxillary and mandibular arches of a boy of about the same age where deciduous teeth have not separated to make room for the permanent teeth. Dr. Bogue told us years ago that he believed that the failure of the deciduous teeth to separate was an unfailing sign of a deficiency in vital power. It may not always be a deficiency in the whole vitality, but it may be an example of what may be called *selective deficiency*, because it occasionally happens in

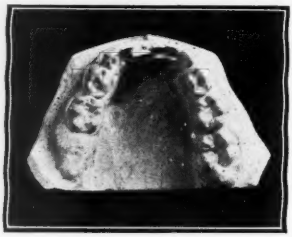

Fig. 36

Mandibular arch of a boy about six years old. The anterior teeth are crowded.

children otherwise apparently robust that the arches do not spread as they should. There must, however, be some relation between this lack of spread and the condition of the general vigor, because sometimes spreading of the arch by means of orthodontia to proper dimensions seems to release something that held back growth and many children who have been physically backward may be seen to leap forward into new physical vigor.

What have we seen so far, and what does it mean to us?

(1) That, under favorable conditions, a monkey develops those forms and proportions of cranium and face that are regarded as normal in monkeys.

(2) That in a monkey with a good heredity and early history, with apparently perfect digestion and endocrine balance and with no symptoms of any disease, a deficiency in even one of the important food elements established about a year and a half after birth may retard the development of both the cranium and the face, change the proportions and positions between the two, distort the face and produce dental arches of insufficient size and bones of very poor quality.

(3) That in humans the principles of cranial and facial development seem to be very like those in monkeys.

(4) That, under favorable conditions, the child develops proper cranial and facial proportions and a broad dental arch, and at the proper age the deciduous arch voluntarily widens to form the anterior portion of a permanent dental arch.

(5) That, under unfavorable conditions, facial development in the child may be retarded so that when it is time for the permanent teeth to erupt, the arch may not be wide enough to accommodate them and they will be malposed. Such a physical deficiency may arise from any of many causes acting either singly or together, such as poor heredity, lack of sunlight, illness, a deficient diet, and perhaps others.

What does this all mean in relation to diet? Not that diet stands alone or supreme, but that it is extremely important during the prenatal period and the early years following birth. Any intelligent physician or dentist can prescribe for the expectant mother a long list of suitable foods, from which she may choose those she finds agreeable and valuable. These should supply liberal quantities of the mineral salts and of the organic acids, sugars and vitamins, which are so essential to the foetus and to the support of the mother. It is quite possible that if this were done intelligently for a generation or two, there would be a much higher average of vitality in new-born infants.

The food of the child during the first three or four years exercises a profound influence upon its whole life. We are getting away from some old-fashioned ideas, among them being the nursing of children, but if we can tell the life and death story of the difference often enough and forcibly enough, there may sometime come a backward swing of the pendulum. We occasionally have opportunity to impress upon expectant mothers that if they cannot bequeath to their children fortunes in money, they may still impart to them a vigor that will enable them to go out and make their own fortunes, since breast-feeding gives the child from seven to ten times as good a chance for life and health as bottle-feeding. There are a few cases in which children cannot take the milk from apparently healthy mothers, but fortunately they are rare, and even they might be corrected.

In the great majority of cases no other food approaches in value the mother's milk during the first year or so of the infant's life.

Vegetables, milk and raw fruit, especially orange juice, all seasoned with common sense, and a minimum of cereals, meats and soft food should provide for the child all of the necessary materials for the extremely active process of body-building and the exercise of vigorous mastication when it is indicated. Children so nourished are resistant, to an astonishing degree, to the ills to which the bottle-fed children and children on a deficient diet are continuously and unhappily susceptible.

Yours very truly,

Percy R. Howe

[MORAL RESPONSIBILITY]

If there is one lesson I should like to read to medical and dental graduates when they reach out their hands to accept a diploma or certificate of any kind which entitles them to practice upon the people, it is that they have accepted a higher moral responsibility than has any other type of individual. I say that an incompetent professional man, medical or dental, can do great harm, but the competent man can do as much good as the minister in the pulpit. I look upon the obligation upon the dentist or medical man as one of the most sacred given to any human being.

—C. N. JOHNSON.

Porcelain Manipulation

A Practical Technic for the General Practitioner

By F. R. Felcher, D.D.S., Chicago, Ill.

V

The Fusing of Porcelain Bodies

Porcelains have definite fusing points, depending upon the amount of feldspar and flux in the combination of the ingredients. Thus we have high-fusing or low-fusing porcelains. Fusing points of porcelains differ, however, from the fusing points of other materials, as metals for instance, in that while we acknowledge a definite fusing point for metals, the fusing of porcelains may be accomplished at a lower temperature by retaining a definite degree of heat over a longer period of time. Metals become liquid at certain temperatures, and this is true irrespective of the amount of time the metal is kept under heat. Until the fusing temperature is reached the metal will remain solid.

It is natural to assume that if we are working with a porcelain whose fusing point is 2500° F., we can and do fuse the porcelain body at that temperature and good results are obtained. There are, however, a number of considerations of importance relative to the fusing of porcelain bodies that should merit the consideration of every operator. Initially let us consider the process called *tempering,* or what is known as the *maturing* of porcelains. By *tempering* is meant the process of slow firing and cooling. This gives as a result a product having greater strength and translucency. The finest glassware having clearness and strength is the result of this process, with the cooling period carried over a long time. Compare such glass with the poorer quality of glass, such as cheap bottle glass. Glass is mentioned here because of its similarity to porcelain.

Likewise, build up two pieces of porcelain. Fire one to the fusing point and remove it from the furnace, and then compare it with the other piece, which has been fired slowly under what we shall call a *time fuse* and allowed to cool slowly in the furnace. There will be a marked difference between the two pieces of fused bodies.

While a metal can be kept at its fusing point for a long period of time, porcelain cannot be kept at its fusing point for any long period without being overfused. In other words, if we bring the heat to 2500° for that kind of porcelain and do not immediately shut off the current from the muffle, we are likely to find that the work is "balled," the fine carvings gone, or the color burned out. As long as porcelain has the characteristic of fusing at a lower temperature than

the acknowledged fusing point, the aim of this article will be to encourage the use of the slow time-bake, especially with the higher-fusing bodies.

It is hardly necessary to consider time-baking for low-fusing bodies. For tempering, however, we must endeavor to allow the material to cool over a long period of time after fusing.

As an example of the results of time-baking, the following is submitted:

In a class recently held, where conditions were alike electrically, the same type of furnace being used, seven different furnaces fused 2300-degree (medium-fusing) porcelain at 2200° in six minutes, each producing a like result, namely, a perfectly fused piece of porcelain. Likewise 2560-degree porcelain was fused at 2400° in six minutes. These experiments must not be taken as definite rules for fusing, since current conditions, such as overloads, may alter the time required to obtain the desired result. This part of the subject will be referred to again later.

In using the furnace for the firing of high-fusing porcelain bodies another factor arises for consideration, that is, the action of a high degree of heat on the platinum wire that is wound around the muffle. Irrespective of what temperature we have obtained in the muffle, it is reasonable to assume, and justly so, that the wire is considerably hotter. We may safely assume also that when the muffle contains a heat of 2500° or 2560°, the platinum is not far from its fusing point, and we endanger the muffle by continuing to fuse at such high temperatures. When this wire burns out, we find ourselves with what we call a *burned-out* muffle, necessitating a repair or a new muffle, each of which incurs expense besides hindering the operator who is so unfortunate as to have only one muffle. Fortunately, the better furnaces have removable muffles, and most of the manufacturers now have a rate of exchange between a new and an old muffle. It is advisable to have an extra muffle handy at all times, and supply houses no doubt keep an extra muffle or two in stock for an emergency.

We find, then, that there are two methods of fusing porcelain bodies. The first is by bringing the heat rapidly to the fusing point of the porcelain body and immediately turning off the electric current; the other is by fusing over a longer time at a lower temperature than the fusing point of the porcelain body and keeping it at that temperature for a given time. The result is a proper fuse, as well as a better piece of work.

As no definite rules can be given for the time-baking of porcelain bodies, it is the operator's duty to learn the particular characteristics of his furnace and the electrical current that he is using. It is always better to have a separate circuit for the furnace unit and not allow

other appliances to be used on that circuit while the furnace is being used. In areas or buildings where there is an overload on the current supply during the day, one must know how much longer to fuse the body during that time. Where a single circuit is used, there will hardly be any change worth noting during the overload period.

The most desirable furnace is one that has the ability to retain its temperature without too rapid a drop when the amount of current is cut down. The furnace having a muffle with too much of a drop in temperature will be hard to manage for time-fusing. Muffles that have been repaired will not register the same as when new. For that reason it is advisable to use new or unrepaired muffles in order to fuse consistently. The thermo-couple should be accurately calibrated to give the reading as closely as possible for the size of the muffle used.

The pyrometer furnace is the only furnace that should be used in firing higher-fusing porcelain bodies. There are some operators who still fuse porcelains without the use of a pyrometer, depending no doubt on an element of guess-work for their results, but in this day this method is unnecessary. A pyrometer must be used for the best and surest results.

Another important and necessary accessory is a time clock which registers in minutes, and which can be set to ring in the number of minutes required. This will remind the operator when to advance the button on the rheostat or when to turn off the current. With such a clock the operator may trust fusing to an assistant, which will enable him to utilize his time for other duties while the porcelain is fusing. In the average practice many occasions arise which may take the mind from the work at hand, resulting in overfused work and sometimes in burnt-out muffles.

Before the ceramist can make use of his furnace for time-bakes, he must become familiar with his furnace. Guess-work has no place in ceramic dentistry. Consistent results must be obtained and we must feel assured that these results will be obtained each time. The subject is large and requires considerable explanation, and a certain amount of practice must be indulged in before one becomes familiar with the technic. When it is fully understood, there will be less overfusing of porcelain, less wear and tear on muffles, and more beautiful results.

In his experience the author has found that a large number of ceramists fuse at the fusing point of the porcelain. If 2560-degree porcelain is used, they fuse at that temperature and complain of muffle expense. Likewise, in some localities where the current supply is uneven, or due to heavy loads at certain times, it is difficult to reach the temperature desired, and when the work is removed from the furnace even at a considerably lower temperature, the porcelain is found to be overfused. This is due to the fact that the porcelain is fusing

at the lower temperature all the time, and the operator is not aware of the fact. There is nothing more discouraging than to find, after having built up a piece of work carefully, that it is overfused when it is about to be finished. It is indeed better to feel that one is safe from overfusing, even if the porcelain is in the furnace a half-minute too long, than to have it overfired in a few seconds.

With the method of firing now to be described—the one used and taught by the writer—a time clock is used and the operator may remain away from his work to attend to other duties while the porcelain is being fused at the lower temperature, or he may leave the turning off of the furnace to the assistant, with the assured feeling that all is well.

Before starting the furnace, be sure that the lever is on Button No. 1 and, after applying the current to the furnace, allow it to heat up gradually until it has reached the highest temperature that can be obtained from this button. Make a note of that reading. Then move the lever to Button No. 2 and take a reading of the highest temperature obtained from that button. Continue to take readings from each button until you get to the point where the pyrometer reads 2400° F. Do not go higher, as that means a strain on the platinum wire around the muffle and increases the possibility of shortening the life of the muffle.

For example, let us assume that Button No. 4 gives a reading of 2200°. Let us assume that 2300-degree porcelain will fuse at 2200° in six minutes. If the heat is brought up rapidly to 2200°, even though Button No. 7 was required to bring it to that temperature, and it is dropped back to Button No. 4, we may leave it there for the six minutes, set the time clock and, when the clock rings, shut off the current. That sounds simple enough. However, the heat must be rapidly brought up to that temperature after the furnace is hot. If a longer time is spent on each button, the porcelain will commence to fuse at some low temperature and, when 2200° is reached and the heat is kept there for six minutes, we may find that the porcelain is overfused. There is some satisfaction in knowing that porcelain overfused at the lower temperature is not hard on the muffle, although there is hardly a happy state of mind at any time on finding out that the porcelain is overfused. By bringing the heat up too slowly it will be found that the porcelain has been fused at 2200°, and that the additional six minutes was uncalled for. These things cannot be given as definite and each operator must work out for himself what the fusing point will be. It must be remembered, however, that the lower the temperature, the longer the time the porcelain must be subjected to it.

Take high-fusing 2560-degree porcelain as an example. It can be fused on a piece of 24-karat gold without melting the gold, if kept

constantly at a temperature of about 1850°, and the time required would be possibly from 15 to 18 hours.

After the furnace is heated, there is not much danger to the muffle in bringing the heat up rapidly, pausing at certain buttons for about half a minute and getting the temperature up quickly. For instance, if the first button reads about 1400° to 1600°, the second button may increase the heat about 150°, and the third button increase the heat about 200°. The fourth button allows more heat to generate and the movement is more rapid. Therefore, a jump may be made from the first to the fourth button, allowing about half a minute there; then half a minute on Button No. 5, which is more rapid; half a minute on Button No. 6, and, if necessary, hold on Button No. 7 or upward until the desired temperature is reached. As soon as the desired heat is registered, set the lever back to Button No. 4 if fusing at 2200°, or to Button No. 5 if at 2400°; set the time clock and, when the time clock rings, shut the furnace off.

It must be emphasized that the longer the operator allows his furnace to come to the desired temperature, the shorter must be the time of fusing. Repetition is again made of the fact that this must be determined by experimentation, and when once found the rest will not be difficult.

High-fusing porcelain should be fused at a point between 2360° and 2400° and can be usually done in about six or nine minutes by the method described above. Medium-fusing porcelain can be fused at about 2200° and probably will require about six minutes. Lower-fusing porcelains need not be time-baked. They usually have a fusing point of from 1700° to 1900°. The same is true when using glazes. These are low-fusing, with fusing points of from 1600° to 1945°.

The following may be tried as an experiment:

Take a piece of platinum and apply high-fusing porcelain to it, making sure that it is well condensed. Place it on a tray before the open muffle door to dry out. When completely dried, place it in the furnace and move up rapidly to a high button, which will quickly give a temperature of 2400°. As soon as that temperature is reached, remove it from the furnace. Now proceed with a similar mix of the same fusing porcelain, place in the furnace the same way, and, after 2400° has been reached, hold the heat at that temperature for six minutes. Note that the second piece will be fused, while the first will be just a high biscuit. If six minutes is not enough, replace for two minutes more at that temperature, or until you find that the porcelain has fused. If it takes all together eight minutes at 2400° to fuse the porcelain, then it is safe to assume that, in the particular furnace you are using, high-fusing porcelain will fuse at 2400° in eight minutes at a rapid bring-up, or less if the heat is brought up slowly.

It is always advisable to allow finished work to cool slowly in the furnace, or if it is necessary to remove quickly, after the furnace has cooled a few hundred degrees, remove from the furnace and place a tumbler over the work. Slow cooling tends to temper the porcelain.

7616 Phillips Avenue.

(*To be continued*)

[INSPIRING ENTHUSIASM]

It is our duty to impart knowledge and enthusiasm on the subject of personal hygiene, which tends to prevent disease of the degenerative type and to raise our innate resistance against infectious diseases; also, specifically, through instruction in mouth hygiene, to promote the health of the teeth and periodontium and through study and unprejudiced investigation extend our vision indefinitely until it is all-inclusive of the primary factors in the etiology of disease.

—SPALDING.

Special Teeth for Cross-Bite Cases

By Alfred Gysi, D.D.S., Zurich, Switzerland
Professor of Prosthetic Dentistry, University of Zurich
(Literary Collaboration by George Wood Clapp., D.D.S.)

FOURTH ARTICLE (Continued)

PROPORTIONS IN ALVEOLAR RIDGES (Continued)

Approximation of the Alveolar Ridges

It has long been recognized, in a general way, that following the loss of the natural teeth the mandible approaches the maxilla more closely than when all the natural teeth are in good positions, but some

Fig. 24
This picture may serve to refresh the mind as to the length of the face below the nose when all the natural teeth are in position.

of the ways in which this alters the procedure of denture-making have not been sufficiently well understood. It is rarely, if ever, practicable for prosthetists to make artificial dentures which restore the original height of the bite. Fig. 26 shows, by means of statistics from a few cases, the seven highest bites which could be made for edentulous patients during three months in the Dental College of the University of Zurich. In all cases the height of the bite was tested by the facial expression and the ability to pronounce clearly. For some patients the height of the bite could not exceed 10 millimeters.

Fig. 25

These alveolar ridges are apparently far apart, much more so than most dentists would keep them when making full dentures, and perhaps farther than is generally practicable when resorption is advanced. Yet the lower third of this face is quite a little shorter than in Fig. 24. Figs. 24 and 25, taken together, may illustrate the often unrecognized and perhaps sometimes unpreventable approximation of the jaws following great resorption which is referred to in the text.

Fig. 27 shows the same maxillary and mandibular ridges as in Fig. 28 (same as Fig. 22). Following resorption the height of the bite has been reduced to about 25 millimeters, measured along the interalveolar crest line. This corresponds in a general way to the highest bite shown in Fig. 26. The approximation of the ridges has increased the inclination of the interalveolar crest line until it now forms an angle of only 60° to the occlusal plane.

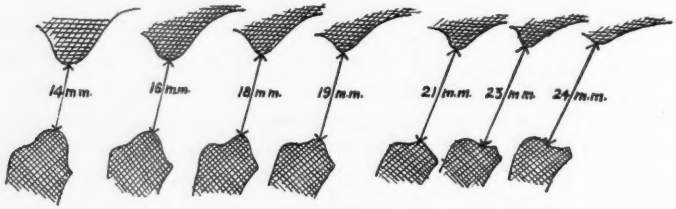

Fig. 26

The seven highest bites, measured along the interalveolar crest line, that could be made for edentulous cases in three months at the Dental School, University of Zurich.

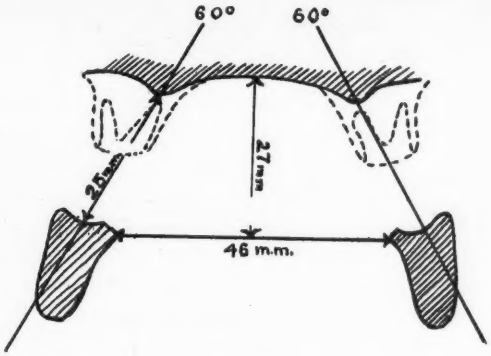

Fig. 27

The approximation of the jaws has further reduced the interalveolar-crest-line angle, as compared with its size when the jaws were farther apart. The closer the bite, the smaller that angle will probably be.

The practical application of the preceding information lies in the fact that, in cases where the interalveolar crest line forms an angle of not less than 80° to the occlusal plane, satisfactory dentures can be made with teeth of normal forms. When the interalveolar crest line forms an angle of less than 80° to the occlusal plane, dentures which will be stable in position, efficient in mastication and comfortable in use *cannot* be made with the normal forms of teeth. The application of

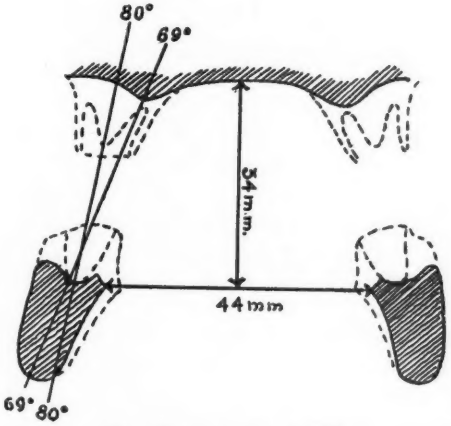

Fig. 28 (same as Fig. 22)

The distance of 44 mm. at the level of the mylohyoid ridge may be due partly to resorption and partly to a mechanical widening of the mandible.

this line and this angle in the articulation of artificial teeth is discussed in a succeeding article.

A Mechanical Widening of the Mandible

Another factor which has not heretofore been recognized may affect the relative positions of the alveolar ridges in such way as to be very important to the prosthetist. Measurement of a large number of edentulous mandibles seems to show that they are wider in the bicuspid and molar region at the level of the mylohyoid ridge than mandible in which all the teeth are present. I believe that there is a mechanical widening of the arch in this region after resorption has become so extensive as to weaken the bone.

As it would require thirty or forty years to carry out a series of conclusive tests on living subjects from the time of the full dentition to the time of complete resorption in the same individuals, such studies as I have been able to make may not be regarded as conclusive, but this widening occurred in the people of whom these mandibles were once parts, and if dentists made plates for them late in life, those dentists had this additional width to contend with. Fig. 28 also shows a width of 44 millimeters at the level of the mylohyoid ridge in extreme resorption. This is the average of eleven mandibles showing great resorption which I measured while in America. These edentulous mandibles were, on the average, five millimeters wider than the average of the mandibles with teeth that I had opportunity to measure there.

Resorption as a Guide in Selecting Teeth

For a length of time after extraction, which varies with individual patients, the character and degree of resorption will change the inclination of the interalveolar crest line but slowly. Therefore, as has already been stated, as long as the interalveolar crest line forms an angle of 80° or more with the occlusal plane, satisfactory dentures can be made with normal-bite teeth. When the interalveolar crest line forms an angle of less than 80° with the occlusal plane, dentures which will be stable in position, efficient in mastication and comfortable in use cannot be made with normal-bite teeth.

Arrangements of Teeth

Normal-bite mandibular bicuspids and molars should be placed directly above the ridge, and the maxillary bicuspids and molars directly below the ridge, to avoid tilting of the plates in mastication. If this is done in cases of great resorption, the teeth will not articulate and may not even occlude. In such cases the mandibular teeth can be set inside the ridge without causing the plates to tilt, but this narrows the dental arch so that the tongue has insufficient space for its function

of forcing the food between the teeth, first on one side and then on the other, and during mastication it is likely to move the denture from side to side.

In cases where the maxillary arch is narrow in the bicuspid and molar region and the mandibular arch is wide, properly formed cross-bite teeth will be easier to arrange than normal teeth. It is necessary only to set them with the long axes in the interalveolar crest line. The lines of force in mastication will then fall far inside the margin of the mandibular denture and far enough inside the margin of the maxillary denture to make both dentures stable. With this arrangement of these teeth the patient will be able to exercise much greater masticating force than with any arrangement of normal teeth that can be made in such cases.

The use of properly formed cross-bite teeth avoids the crowding of the tongue in the mandibular space such as unavoidably occurs when mandibular teeth are placed far inside the ridge. When the tongue is crowded, it is likely to lift the mandibular denture. The form of the maxillary teeth affords space for the tongue in the upper part of the mouth.

Cross-bite teeth should be formed to harmonize with the engineering principles that I announced years ago, which have been successfully applied to harmonize with normal-bite teeth with the average mandibular movement, lateral and protrusive. The occlusal surfaces should exhibit a maximum of efficiency with a minimum of masticating force.

For cases in which the mandibular ridge is very thin and sharp, or where for any reason that ridge is incapable of sustaining any considerable pressure during mastication, a special form of maxillary cross-bite teeth is desirable. The occlusal surfaces of these teeth will have to be very narrow mesio-distally, and they should be able to cut the food with the exercise of very small power so that they do not cause pain from pressure. While they would not be equal in efficiency to the other forms of maxillary cross-bite teeth, they would offer to the patient the same cosmetic effect and a considerable degree of masticating efficiency.

(*To be continued*)

A New Material For Denture Construction

By H. F. Prange, M.E., D.D.S., and C. H. Prange, M.E., New York, N. Y.

This article describes a class of material which is new, as far as its application to dentistry in this country is concerned, yet not new; for it has been in use in Europe for about seven years and has there found a rapidly expanding field. This material is generally known as *stainless steel* and includes the alloys of chromium and iron and special forms containing an additional alloying element. This article is concerned particularly with the application of such materials to the construction of baseplates for dentures.

What is commonly called *stainless steel* is ordinarily considered as a single definite material and usually is more or less exclusively identified with the making of cutlery. It is important to point out that this is an erroneous conception, and that stainless steel includes a whole group of steels having characteristics as diverse as those of the carbon steels and, therefore, adaptable to a wide variety of uses. The term *stainless steel* covers a series of alloys of iron containing chromium in varying amounts and also carbon. The chromium content is usually about 11% to 15%, although it may run much higher, while the carbon content in the different alloys may range from as low as about .05% to as high as .4%. In addition to these steels many special alloys are made which contain, besides chromium, various percentages of nickel, copper, silicon, molybdenum, etc. The term *stainless steel* has been used thus far in the broad sense to cover the whole series of chromium-iron alloys which possess the property called *stainlessness*. It is common practice, however, to designate especially as *stainless iron* those alloys having a carbon content of .12% or less and to restrict the term *stainless steel* to those alloys having in excess of .12% of carbon. The distinction is arbitrary and is based upon the fact that different methods of production are necessary in order to obtain such a low carbon content as .12%. As regards physical and chemical properties, however, the distinction between stainless steel and stainless iron is quite important. This is chiefly on account of the fact that in order to produce stainlessness, or resistance to corrosion, in stainless steel, it is necessary to heat treat the material and highly polish the surface. Stainless iron, on the other hand, is stainless without heat treatment and without polishing. Stainless iron, therefore, is more adaptable to dental work than stainless steel.

With reference to the application of stainless material to the construction of baseplates for dentures it is desirable to enumerate, for purposes of comparison, the principal characteristics of an ideal baseplate. These are as follows:

1. A high degree of strength.
2. Lightness of weight.
3. Good thermal values.
4. Non-corrosiveness.
5. A smooth, non-porous surface.
6. A natural and attractive appearance.
7. Low cost.
8. Accurate adaptation and ease of production.

The inherent properties of stainless material are such that the specifications just given may be fulfilled to a large extent. These properties are briefly described in the following:

1. Stainless iron and steel are exceedingly strong, the tensile strength running from about 80,000 pounds per square inch upward to over 200,000 when heat treated. They are more than twice as strong as the metals ordinarily used in plate construction, and it follows that the plate can therefore be made very thin.

2. Being very thin and having a specific weight of .28 pounds per cubic inch as compared to gold at .70 pounds per cubic inch and platinum at .78 pounds per cubic inch, stainless plates are also unusually light in weight. The average stainless baseplate weighs about six pennyweight as compared to fourteen for the same plate made of gold. Furthermore, they have a resilience and a stiffness which assure that the plate will not lose its shape in service.

3. Stainless material has a high heat conductivity. This, in conjunction with the thinness of the plate, results in very good thermal values. Consequently, having normal stimulation, the tissues maintain circulation and tone.

4. Stainless material is really stainless in fact and after years of service in the mouth has been found to remain bright and shining, the surface being untarnished and smooth. Accordingly, stainless material is permanent and safe to use in the mouth, as there is no corrosion and consequently no metal passing into solution. There is also no taste. It is of interest to note that stainless material is obtainable which is highly resistant to electrolytic action, a point of considerable importance when there are various metals and amalgams in the mouth. Furthermore, some of these alloys have unusual resistance to oxidation, being capable of withstanding a temperature of 2200° F. for hours with but very slight effect.

5. Stainless material is dense and non-porous. Being finished by the cold rolling process and subsequently polished, the surface is perfectly smooth and free from porosity. These properties insure the essential qualities of comfort, tissue tolerance and prophylaxis. Thus odors of food and tobacco are not absorbed and both the palatal and the

lingual surfaces due to their smoothness remain peculiarly free from mucus and food deposits. Inasmuch as all dentures in function have a certain amount of motion, it is essential that the tissue-bearing surfaces be perfectly smooth and polished in every little groove and depression in order to obviate friction and local irritation. In this way tissue resorption is minimized and the denture-supporting tissues retain their natural and proper proportion. Freedom from friction prevents inflammation of mechanical etiology, thereby preserving a healthy, intact mucous membrane to resist bacterial invasion. The cleanliness of the tissue-bearing denture surfaces, furthermore, minimizes the chance of infection by reducing the number of bacteria present. Cleanliness also obviates holding in contact with the mucous membrane irritating acids and other bacterial products of putrefaction and dissolution, which in their turn tend to cause inflammation, rendering the tissues susceptible to infection by the numerous varieties of pathogenic oral organisms.

6. Stainless material is capable of taking a brilliant polish, as evidenced by its use in making astronomical mirrors. It has a silvery lustre, similar to platinum, varying from slightly bluish to slightly yellowish, according to the composition of the alloy. A denture made of it has an appearance which is clean and attractive and free from any suggestion of repulsiveness.

7. The material is much less expensive than the precious metals. This opens up a wide field for the introduction of metal dentures to a class of people who have been excluded by the high cost of the precious metals. The comparatively low cost of the material also permits of the use of methods of production which would be impractical with the more costly metals.

8. The mechanical properties are such that novel designs of denture construction and methods of production are feasible, as, for instance, the joining of parts by means of electrical spot-welding. Also, due to the high ductility, it may be formed to the most difficult shapes, and by following a suitable technic very accurate adaptation is possible.

To recall the most important points, stainless material possesses to a remarkable degree properties which are associated with the ideal denture. Due to its great strength, the thinness of the finished baseplate is unequalled. The slight thickness of material of the palatal portion barely changes the feel of the vault to the tongue and creates an optimistic and confident attitude on the part of the patient, which is particularly helpful in the case of those who have never before worn an artificial denture. The strength and toughness of the material also give assurance of reliability, as there is no likelihood of sudden and embarrassing breakage. With the ideal denture we associate also a clean and smooth surface. No cast or moulded material in use is

equal in this respect to the dense, non-porous surface of cold rolled stainless material, as it may be given a high polish in the flat state, which is preserved through the forming operations and is present in the finished denture. Finally, the denture should not be repulsive in appearance. While stainless material does not possess the natural color of the tissues, it conveys an agreeable impression of cleanliness, due to the lustre of its polished surface.

As stated above, stainless steel and iron are applicable to a wide variety of uses, and special alloys are available to meet the most unusual and exacting requirements. To illustrate the wide range of uses of stainless material, it may be stated that it has been successfully used for making surgical instruments, cutlery, mirrors, ball bearings, etc. Also, where resistance to oxidation at high temperatures is required, as in airplane engine valves, and in other applications where strength has to be maintained at high temperatures, it has shown marked advantages. Still other uses are for the construction of chemical apparatus where acids and solutions of various salts are to be handled, for steam turbine blades, where the erosive action of steam at high velocity is encountered, for valves of pumps and hydraulic machinery, for cooking utensils and for many other uses. Obviously no one alloy is suited to such varied requirements.

Therefore the problem arises of selecting the alloy having the best combination of physical and chemical properties to meet a given condition or set of conditions. A thorough study of the characteristics of the various alloys with reference to mechanical properties, such as strength, ductility, capacity for cold working, etc., of chemical properties such as resistance to various forms of corrosion, including electrolysis, also of microstructural characteristics and methods of heat treatment, is therefore essential. Also, the cost of the various alloys in relation to the use for which they are intended is an important consideration.

In relating the new material to present practice it may be mentioned that the principal metals in general use at present are the gold and platinum alloys. Experience has demonstrated that these metals possess properties which render them highly desirable for dental uses. It is not the purpose of this discussion to attempt to cast doubt upon this fact. It is, however, important to recognize that the place which is held by these metals is due to the desirable combination of physical and chemical properties which they possess, and not due to nor dependent upon the fact that they are precious metals. There is some danger of taking a prejudiced point of view in considering, for dental purposes, a metal which is not a precious metal. A material should be judged upon its merits in relation to the use for which it is intended. To illustrate this point, it would be most unfortunate for the progress

of modern civilization if the places of iron and gold were interchanged, that is, if iron were scarce and precious and gold cheap and abundant; for the properties peculiar to iron are so useful that without large available supplies of it we should not have the great bridges and powerful and complicated machines that we now have. Stainless material possesses a combination of properties which is unique, and which makes it very interesting in relation to dental work.

That stainless material may successfully be applied to denture construction has been demonstrated by actual experience. In Europe the material has been in use long enough to bear out the claims made in behalf of it and, although the expected difficulties in introducing it were encountered, it has rapidly been gaining favor. The authors have been in close touch with several hundred plates which have been put into service in this country during the past three years and it is possible to say, on the basis of the results obtained, that stainless material which is entirely suitable for this service is obtainable at the present time. It must be remembered that stainless steel is a recent development, and that great advances have been made in knowledge, in methods of production and in the development of special alloys which have widely extended its field. It is likely that further advances will be made.

Due to space limitations, it is impossible to take up details of technic, but it may be said that at the present time all work is done by cold forming or swaging processes, as the casting of stainless material is attended by obvious difficulties on account of the high temperature required and other factors. It has been found practicable to make full upper and lower as well as partial plates. Due to the fact that it can be electrically spot-welded and to the rapidity with which this operation can be performed, it is practicable to use comparatively thin material reinforced as required by an additional sheet. By this means provision can readily be made for a finishing line for the vulcanite or other moldable material. Also, by means of spot-welding, retainers for the vulcanite can be quickly and securely fastened to the plate.

A great deal could be written regarding the various types of stainless steels and their comparative advantages, the methods of forming and details of the design of dentures, the application of electrical welding, etc., but the most that can be done at this time is to make known the possibilities of this material and thus to stimulate interest and further development. Due to its unique qualities, stainless material possesses possibilities in its application which are not found in any other existing material. There is, therefore, every reason to believe that it will prove to be very helpful to both dentist and patient, and that the field for metal dentures will be greatly extended in the future.

124 West 72nd Street.

Developments In Indirect Inlay Technic

By Louis I. Abelson, D.D.S., New York, N. Y.

(Continued from July)

Laboratory Technic

The modeling compound impression with its adhering tray is dried and surrounded with a thin strip of warmed sheet casting wax, about 30-gauge, the heat of the hand being sufficient to make it pliable for use. Remove the excess of wax that extends more than two millimeters below the periphery of the impression. Avoid holding the warmed burnisher constantly on the soft wax, since the heat may penetrate and warp the impression; rather keep the instrument just

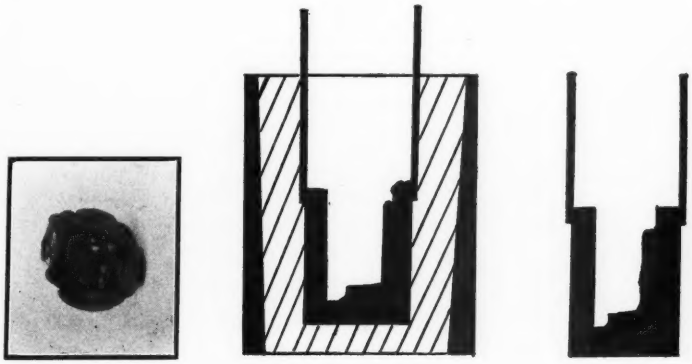

Fig. 22

A—Inlay impression. B—Impression dammed with 30-gauge casting wax C—Invested impression.

warm enough to iron it to place and still be able to cut off the excess. We must avoid this excess because of the danger of enclosing air spaces beneath it, leaving areas of the impression unsupported by the investing plaster against the pressure of our packing instruments. (Fig. 22-A and B.)

The impression, surrounded by the collar of soft fine wax, is now moistened on the exterior to insure the flowing and attachment of plaster to all irregularities remaining on the outside and thus reinforce the impression material.

Various forms of plaster rings are used for investing these impressions, but it will be found most practical and economical to use the tapered nickel-plated rings made for this purpose. Rubber rings are

not satisfactory with any of the compression devices used for the condensation of amalgam, because the plaster will fall apart under the pressure, due to the lack of rigid support by the rubber ring.

Fill the plaster ring, previously lubricated inside, with a slow-setting plaster and sink the surrounded impression to a depth where the topmost margin of the cavity impression is about one centimeter from the level of the top of the plaster ring. From this same mix pour the beeswax half of the bite onto one side of the articulator. This cast acts as a solid backing for the wax bite when the die is set into its pink wax seat. If we are particularly familiar with the behavior of plaster, we may use a stiffer mix in the ring, one that will stay put without flowing. When the plaster just reaches this stage, we may force the *dry* impression, unsurrounded with wax, into the plaster without danger of its running into the impression. This saves the time of encircling it with pink wax but should never be tried unless well practiced, and only when one is really pressed for time.

After the plaster has just set, trim it flush with the ring (Fig. 22-C), and if any of the lip of the plaster overlooking the impression is sharp, round it off to avoid chipping off into the amalgam during packing. For the same reason, always keep the ring clean after trimming and during packing. Never wipe plaster particles from the inside of an impression, because some will adhere to it and mar the smooth surface. Blow them out with compressed air or use a small sable-hair brush for their dislodgment.

Set aside this ring containing the impression for at least a half-hour to permit the plaster to resume room temperature, and then proceed with the packing of the die.

Packing the Die

The instruments used in packing dies are simple, consisting of a match-stick and a flat or round-ended instrument about ½ centimeter wide. To these may be added the pressing pliers or presses for more forceful condensation of the amalgam.

The materials used are of two types: copper amalgam and regular filling alloy amalgam. Cement and plaster are unsatisfactory and should be used, if at all, only as an aid in getting a pattern readjusted to the die or natural tooth.

Copper amalgam comes prepared in solid pieces containing the necessary mercury to start the mix. It is softened by being held in an untinned iron spoon over the flame until each piece is covered with globules of mercury. Then place it in a wedge-wood mortar and triturate it to a very sloppy and soft consistency, adding the necessary amount of mercury to obtain this texture.

The filling alloy is triturated with sufficient mercury to produce a mix of similarly sloppy, soft consistency, the proportion generally needed being about one and three-quarters parts of mercury to one of alloy. In amalgamating large masses of alloy and mercury, do not permit layers to collect on the sides and remain inactive. It must be remembered that amalgam at rest begins to set immediately and the mixture of such masses on the bowl with the thoroughly triturated part at the bottom of the mortar will interfere with the quality and setting time of the mix. While triturating, continually wipe these accumulations into the center to keep all in circulation.

Place a small piece of this sloppy amalgam into the impression, then tap the ring on a soft or padded surface, and the amalgam will flow into the crevices and corners of the impression. Add a little more and tap again, this time tamping into the various corners with a match-stick, avoiding pressure or force. When the entire surface of the impression has been so covered, squeeze out some of the mercury from half of the remaining amalgam and by adding and tamping down with the match-stick gradually replace the original sloppy mix with a heavier one and in that way fill the ring with a harder amalgam.

Upon reaching the surface, remove as much of the mercury as possible from the remaining half and add it to the packed impression, this time pressing down gently with the flat-faced instrument. When this becomes of less value, again switch to a more powerful agent such as the pliers or press, interposing a thin slice of cork to prevent adhesion to the plunger.

The packed die, although apparently condensed, will very often yield more mercury if pressed down again by the flat-faced instrument, especially around the edges, the center apparently always being more compressed by the pliers. Rolling the ball of the thumb over the packed material will also remove mercury that will not ordinarily come to the surface. The ring is set aside to harden until the next day, although we may start work on a die made of filling alloy after about five or six hours.

When the die has completely set, remove the investing plaster and die from the ring, having taken the precaution of lubricating the ring before pouring the plaster, thus facilitating this step. Saturate the plaster with cold water so that it may be cut away more readily, and when the impression with the die attached is removed, place it in warm water, and, just as the compound is warm, remove the die. If hot water is used, the compound melts and sticks to the die, making a very unpleasant process necessary. If this should happen, we may remove the remaining pieces by picking them off or dissolving them out with pledgets of cotton saturated with chloroform.

Fig. 23
Tapered die.

Grind the base of the die to a truncated pyramid which will key into the cast and permit easy removal. (Fig. 23.)

Wax the prepared die to its seat in the unpoured pink half of the bite, making sure that the die has gone down to its full extent cervically as well as occlusally. Add wax to the margin of the base of the prepared truncated pyramid so that the plaster, when poured, will surround only this prepared portion of the die.

Fig. 24
Casts mounted on articulator, showing seats for dies.

Before pouring the other half, moisten the poured half and also the unfilled pink wax and lubricate the exposed metal die.

After permitting the second poured half to set thoroughly, place it in warm water, allowing the heat to permeate the wax gradually and permit clean separation without adhesion of the wax to the models. Avoid the use of hot water because of the sloppy appearance of the models with wax sticking all over them and the possibility of melting some of it into the pattern wax. (Fig. 24.)

Making the Pattern

In the making of patterns on dies we rarely if ever need any form of matrix for confining the wax to the cavity, since adaptation is easily obtained by digital manipulation. There are two principal ways of making patterns, (1) by using a cone of wax forced into the cavity, as in modeling compound impressions, and (2) by melting in.

In using the wax cone, warm the apical half and force it into the preparation of the die, which has been previously lubricated and warmed to prevent adhesion and chilling of the wax. Remove from the die and, if all details are not defined, rewarm the die by placing the truncated pyramid end of the die in a small Bunsen flame for an instant and force the wax further down.

When we get a complete cavo-reproduction, trim away the approximal excess so that the die will go to its seat in the plaster cast deficient of approximal contact and reduce the occlusal excess to a point just below occlusion. Now saturate the plaster casts with warm water to prevent the adhesion of molten wax, place the die on the cast, melt the occlusal excess with a suitable instrument and bring the casts together. Trim away the displaced wax and add to the areas that do not have a sufficient quantity. The wax we now add is brought across to the contact point and, when the casts are brought together again, we get a general blocking out of the occlusal surface. This melting is done rapidly and not deeply to avoid heating the main mass.

Upon the removal of the die we now find the imprint and guide of the adjacent tooth for building the contact point and also the high and low spots on the occlusal surface. Add more wax to the areas that need building out in the embrasures and complete the carving of the pattern. We may replace the pattern on the casts if any special questions arise.

In the second or melt-in process, use a warm, lubricated die and overfill the preparation with molten wax and, with fingers moistened with cold water, force the wax into the deeper corners. If on examination discrepancies are found, rewarm the die and, without heating the wax, compress it again with the fingers and, as a rule, all irregularities

will be ironed out and the corners well defined. Build out the contact point and occlusion as described in the wax-cone method.

Chill in room-temperature water, add a 16-gauge sprue-former, chill again and remove. If the pattern is unusually large, requiring more than a 16-gauge gate, add soft pink casting wax to the pin to widen it. Do not make a large, round pin, but add the wax laterally so that the sprue is only 16-gauge thick but wider and ribbonlike.

310 West 72nd Street.

(To be continued)

[HISTORY'S PART]

The significance of the work of a profession, and its true value and position with regard to humanity, is first made clear to us through history. Only after we have reviewed the labors of thousands of years and have seen how our science has advanced can we appreciate the work of the individual and part he has done. "Much arises which has already perished, and what is now honored is already declining."

—WEINBERGER.

Our Code of Ethics—An Ideal

By Carleton Cleveland, D.D.S., Chicago, Illinois

Rightly considered, a discussion of the subject of ethics as it pertains to the dental profession is part and parcel of dental economics and therefore should be studied and considered from that point of view.

The word *ethics* is derived from the Greek and means: "That which pertains to character." Webster tells us that ethics is "the science of moral duty; more broadly, the science of the ideal human character"; while Crabb, in his work on English synonyms, writes of the word *ethical* as referring to "the principles of right in the abstract, with reference to the individual character and its complete development in accordance with general human laws."

From these definitions we deduce that since ethics has to do with a consideration of one's obligations toward one's fellow-beings at large, dental ethics must pertain to a consideration of the dentist's obligations—absolute honesty and selflessness—toward his patients, his brother dentists, and the world at large.

And right here we come into direct contact with the first section of the Code of Ethics recently adopted by the American Dental Association, which reads: "In his dealings with the patients and with the profession, the conduct of the dentist should be in accordance with the golden Rule, both in its letter and in its spirit." Strange as it may seem, it nevertheless appears that the great trouble in the profession in the past has been that the work, the atmosphere, the environment tend to breed egotists and reactionaries—petty jealousies, ignorance of the Golden Rule, imposing upon or capitalizing the gullibility of the public, tearing down the reputation of a competitor, all of which tend to interfere with the growth or the stability of true professional ethics.

In times past there has been a tendency to look upon the professional man as on a somewhat higher plane than those engaged in activities of a more commercial nature. The professional man was likely to be of a more pronounced intellectual disposition and capable of keener interest in problems of various kinds than the business man, who, lacking the purely intellectual interest, was more apt to be moved by the profit-seeking motive. This state of affairs, it is safe to say, is now somewhat altered owing to the great influx into business activities of university-trained men, those possessing a higher intellectuality than was formerly found in business pursuits.

Possibly some responsibility for the seeming laxity of many to appreciate fully the importance of ethics as related to their profession may be laid to the fact that but scant, if any, attention is given the subject in the curriculum of the average dental college, notwithstanding

the fact that the student years would be the opportune period during which to establish the precepts of dental ethics. It is here, at the very outset of a student's glimpse into a professional science, that the great step should be taken of teaching the vital importance of right action under a given circumstance and the reason therefor. All too frequently does the young man or young woman enter upon a professional study with the one thought of pecuniary gain to be derived therefrom as a predominant factor in the undertaking.

It is pleasing, however, to note that the great educational institutions of the country are coming more and more to realize the vast importance of that age-old truth that "when character is lost, all is lost." Today an earnest endeavor is being made to impress upon the tens of thousands of students attending our universities and colleges that what one *is* in life is of vastly more importance than what one *has*. In a comparatively recent issue of the *Los Angeles Times* the chord was struck when, in commenting upon this improved condition, the statement was made that "the new maxim is 'Educate yourself to be something, not merely to get something.' "

Down through the ages, codes of ethics reflecting the ideas of various scholars and philosophers have been given as guide-posts for the conduct of different groups of men and women representing various activities—professional, scientific, and even commercial. The principles set forth in these codes have invariably borne some resemblance to the Golden Rule—that grand message of conduct voiced to the world for all ages in the Sermon on the Mount—and have been designed primarily for the development of the moral standard of the men and women of a particular profession, so that by such guidance they may gain and retain the greater respect and admiration of all peoples.

And so, for similar reasons, the Code of Ethics of the American Dental Association came into being—not, however, as an arbitrary set of rules binding the dental practitioner, but rather as an ideal to be looked up to, an ideal that will raise the standard of dentistry. There is no gainsaying the fact that dentistry in itself is a service to mankind, but unless the profession holds itself to an ideal such as that set forth in the Code of Ethics, it faces the danger of lapsing into a mere trade or business.

The dental practitioner who feels that he must serve humanity and serve it honestly and efficiently has indeed made a start in the right direction. He will perform his work faithfully and conscientiously, and in all likelihood he will be charitable in his attitude toward his fellow-practitioners. He will, in short, soon find himself readily obedient to his Code of Ethics in its entirety.

1825 Byron Street.

Oral Surgery In Practice

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(*Continued from July*)

UNERUPTED AND MALPOSED TEETH

¶ 152. Conditions especially indicating the removal of unerupted, impacted and malposed teeth are: neuralgic pain, impaired vision, rheumatic pain, or other systemic or local disturbances of obscure etiology.

Malposed Unerupted Teeth in Apparently Edentulous Spaces

¶ 153. The position of unerupted malposed teeth may frequently be determined from a combined roentgenographic and clinical examination. Presence of a bulging bone or an eminence suggests the location of a malposed tooth. When a roentgenogram is used for the purpose of ascertaining the position, it should be remembered that if the outline of a malposed tooth is clearer than that of the roots of the teeth adjoining it, the impaction is usually to be found in lingual position. On the other hand, a clear outline of the roots of the adjoining teeth indicates that the impaction is located buccally. A "bite" film often furnishes valuable information in this connection. (See Figs. 125-131.)

Fig. 125

Fig. 126

Fig. 125

Roentgenogram showing both maxillary canines and one premolar unerupted and malposed.

Fig. 126

Roentgenogram showing both maxillary canines unerupted and malposed, symmetrically situated and lying in the palate.

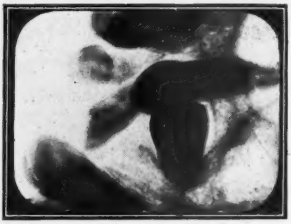

Fig. 127

Fig. 128

Fig. 129

Fig. 130

Fig. 131

Fig. 127

Roentgenogram showing maxillary central, lateral and canine malposed and unerupted.

Fig. 128

Roentgenogram showing a maxillary canine and premolar unerupted and malposed.

Fig. 129

Roentgenogram showing an unerupted and malposed mandibular premolar in vertical position.

Fig. 130

Roentgenogram showing an unerupted and malposed mandibular canine in horizontal position.

Fig. 131

Roentgenogram showing an unerupted and malposed maxillary canine.

Removal of an Unerupted Malposed Tooth

¶ 154. Too much anxiety to liberate the unerupted and malposed tooth before sufficient bone covering it is removed often leads to the fracture of either the jaw bone or the tooth and invariably causes trauma

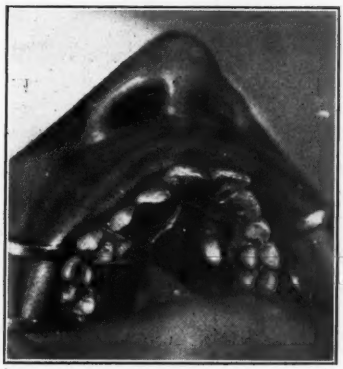

Fig. 132

A rather well exposed unerupted malposed maxillary canine in palatal position. The muco-periosteal flap is held out by sutures tied to a tooth in the opposite side of the arch. This method of holding out the flap is very advantageous, for it does away with a gum retractor, which usually interferes with the operator's work by obstructing the field of operation, and which also injures the retracted tissues. No attempt should be made to take out the malposed tooth until it is well *liberated* from the covering of osseous structures by means of chisels, burs or trephines.

and injury to the surrounding structures. This can be avoided if the operator does not hurry in getting the tooth out and does not resort to force rather than to surgery. (See Fig. 132.)

Malposed Third Molars and Their Treatment

¶ 155. To remove a second molar in order to allow an impacted third molar to erupt is not good surgical judgment, for such impacted teeth do not erupt normally but remain malposed. Such teeth do not facilitate mastication nor can they be utilized effectively as abutments for prosthetic restorations. These conditions are conducive to periodontal lesions, hence the practice of extracting the second molar in order to make room for the impacted third molar to erupt is not a good one. (See Figs. 133-136.)

¶ 156. Partly erupted mandibular third molars often give rise to swellings, pain and trismus. Such conditions may be effectively treated by the insertion of a narrow strip of iodoform gauze under the gingival

Fig. 133

Fig. 134

Fig. 135

Fig. 136

Figs. 133-134
Roentgenograms revealing impacted third molars.

Figs. 135-136
Roentgenograms showing the position assumed by malposed third molars situated in positions similar to those shown in Figs. 133 and 134, when the second molars are extracted for the purpose of permitting the malposed third molar to erupt normally. Such malposed teeth *remain malposed;* they cannot be used advantageously as abutments for restorations nor are they of any use in mastication. On the other hand, the removal of the malposed third molars cures the pathological condition, if such a condition exists, and thus corrects the abnormality. By such procedure the normal second molars are conserved.

flap covering the crown of the erupting tooth. This drain should be changed every twenty-four hours and in from three to five days such conditions usually subside. (See Figs. 53-54.)

¶ 157. A malposed unerupted or partly erupted third molar with pericoronal infection is a source of potential trouble. Removal of such a tooth is indicated as a prophylactic measure. (See Figs. 53-54.)

¶ 158. When the history of a patient indicates repeated attacks of acute infection caused by a malposed third molar, the patient should be advised that the removal of the tooth is absolutely unavoidable, and that it should be done as soon as possible.

Root in the Mylohyoid Space

¶ 159. The lingual plate of the mandible in the region of the apices of the third molar is often very thin and occasionally the apices even

perforate it. This anatomical condition must be borne in mind when mandibular third molars are operated upon. Occasionally fractured apices are forced through the plate into the submaxillary fossa between

Fig. 137

Photograph of the lingual aspect of a dry specimen of a mandible showing the penetration of its inner plate by the apex of the third molar. During extraction such roots are often fractured, and when an attempt is made to remove them, they become embedded between the muco-periosteum and the bone. Care should be exercised not to force these fragments down into the deeper structures, for great difficulty will be encountered in their removal. (See ¶159.)

Fig. 138

Fig. 139

Fig. 138

Roentgenogram showing the fractured apex of a third molar forced into the mylohyoid space. (See ¶159.)

Fig. 139

Roentgenogram of the same area as in Figs. 137 and 138 after the fragment had been removed. (See ¶159.)

the lingual aspect of the mandible and the periosteum, a region from which it is a rather difficult task to recover such a root. (See Figs. 137-139.)

¶ 160. Roots of mandibular third molars often closely approach the inferior dental canal and during extraction may be forced into the

Fig. 140

Fig. 141

Fig. 140

Roentgenogram showing an unerupted malposed mandibular canine, with a fistulous tract, situated in an apparently edentulous space.

Fig. 141

Roentgenogram of two mandibular premolars and a canine in an apparently edentulous space.

canal. Since the removal of these roots is a rather difficult operation, great care should be taken to prevent such accidents. (See Figs. 140-141.)

¶ 161. Chiseling the bone either for the removal of malposed and impacted teeth or during the performance of any other surgical operation may be reduced to a minimum by the use of surgical drills, burs and trephines.

¶162. During the operation for the removal of unerupted and malposed teeth care should be exercised not to drill, cut or chisel into the unerupted tooth itself, for this may weaken the impacted tooth to such a degree that when an attempt is made to dislodge it, a fracture will result, thereby complicating the operation.

¶ 163. The surgeon should not lose sight of the fact that while an operation may be of the greatest importance to the patient, the operator will never be forgiven if any unnecessary damage is done during its performance, such as breaking of facings of bridges, fractures of teeth, dislodgment of fillings and inlays, etc.

355 East 149th Street.

(*To be continued*)

Togo's "Discursions"

Mr. Editor of Magazine Seeking to Make Dentistry Comprehensible Whenever Possible:

Hon. Sir:—

Recent devastating personal experience in Japanese Molar Department of eating equipment will cause distinct variation from usual High Brow tone of Oriental Contribution, for this occasion only! Thank you. Object of slight detour briefly recounting hazardous and distressing personal disaster is to call attention of all lassitudinous intelligences now engaged in practice of toothache diagnosis to comprehensible fact that cases are not always simple and that great care is necessary in order to avoid expensive errors.

Circumstances about to be unloaded on intelligent reader consisted principally of following series of events, to wit:—

Entire set of personal tooth equipment have been joyful companions for extended period of adult life which has been slowly but steadily becoming more so. Excellent Behavior has been unvarying rule of conduct for all tooth units in dental arch, and proximity of competent dental services owing to debilitated job as office boy has favored installation of suitable repairs pro and con as indicated. All cavities have been promptly and carefully restored as soon as discovered. No traces of tartar deposit or Hon. Pyorrhœa have ever been discovered by even the most ruthless Periodoctorclasia Proponent! During sixteen years most recently elapsed, gold inlays have been suitably installed in all approximal cavities in bicuspidors and molars when not visible on smiling line, with great success, except single exception about to be publicly exhumed for benefit of all whose mental equipment is not solid ivory.

On regrettable date of several years' remoteness entirely competent and excellent dentist then enjoying slight benefits of Japanese laboratory assistance placed excellent gold inlay in approximal cavity in mesial surface of left upper second molar. While cement was still soft said dentist placed youthful crowbar on occlusal surface of inlay, at same time administering slight nod to fair lady assistant who instantaneously and cheerfully administered devastating swat of approximately 7 H.P. intensity on protruding end of crowbar. * * * * ! ! ! !

Shades of deceased and Honorable Ancestors! Sharp stabs of pain immediately comprehensible were of sufficient intensity to cause shooting stars and other astronomical manifestations too numerous to classify! When universe finally concluded to behave following remark was directed to Hon. Doctor of D.D.S. who had done so, "Inside information from

Japanese sources causes view to be divulged that fast teamwork between assistant's mallet and crowbar has probably slightly cracked oriental molar of unimpeachable past reputation and previous record of good conduct!" "Extensive brain-storm showing even less intelligence than usual," was snappy come-back from D.D.S.

Six years of lameness in ensuing years on left side were of very peculiar nature. Entire comfort was experienced so long as teeth were not used in eating. Full employment was never possible however without causing pains which called for immediate re-routing of food bolus to opposite side. X-Ray and all other examinations of clinical nature disclosed 100% O. K. with prospects unanimous for complete enjoyment of all meals. "Slight inflammation of Hon. Pulp with other etc causing present disturbance" was statement from interested recent employer who was doing diagnosis slightly mixed with more remunerative employment. "Quite so," was reply from Japanese Dep't. Also, "Where do we go from here and when do we eat in considerable comfort on debilitated side of six years' duration?" "Soon or perhaps presently trouble will be deleted as senseless" was invariable rejoinder.

Incorrectness of statements regarding near date of comfort was presently disclosed by pain of terrific extent involving entire left side of jaw which in spite of complete misery showed bursts of speed obliterating all other sensations from brains when present. As Assorted pains of upper and lower Dept's became 24 hour companions, sleep was luxury of considerable inattainability. Careful examination for all possible causes of disasters present disclosed smallish but very sensitive cavity at gum line of disreputable but otherwise satisfactory lower third molar. "Ha Ha," said D.D.S. of kindly disposition and well developed biceps. "Cause of entire disturbance is now immediately removable." "Third molars are useless and unnecessary; slight gas snort precedes removal and uneventful recovery." "Important if true," I submit, "but cable rates to Japan to announce news of discontinuance are expensive, therefore be careful if possible."

"Kindly suspend publication and take deep breath where it will do most good!" Return to Earth presently disclosed following partial conditions—minus one lower third plus one sore jaw of highly calamitous extent. (Deeply attached third molar had been persuaded to leave in three acts and one prologue.)

More days of misery with following comments from assorted D.D.S. in consultation assembled—"Slight injury to very inferior dental nerve." "Possibly dry socket producing extensive pain," gladly reports another. Meanwhile pain was continuous and devastating. Finally outraged lower jaw became only passively painful and classification of symptoms somewhat possible at which time increasingly evident that old crippled friend on receiving end of *sledge* hammer blow was ex-

tremely temperamental and resentful of all interferences. Novocain injected around roots of said tooth produced numbness of blissful proportions. Hand-hammered gold inlay was at once removed disclosing delicate crack visible only afterwards. Tooth was immediately removed and carefully examined. Crack ran across one horn of Hon. Pulp which had been alive at time of forceps divertissement. Save for usual features of jaw soreness and facial fatigue recovery was uneventful and gloriously complete.

Moral of Oriental tooth disaster consisting of six years' partial disability and two weeks of complete anguish may be profitably perused by any one sufficiently interested and will be found to contain following useful ingredients including a few thought germs of promising proportions:

1. Sledge hammers in assorted sizes have many useful services to perform for mankind; some of said services are properly discharged within the more or less sacred wall of office concealing Doctor of D.D.S. as usual inhabitant; however, driving any kind of gold inlay to place does not occur among these uses. If inlay fits walls of cavity no hammer is needed to get it to remain seated in proper position. If inlay does not fit no hammering will make bad matter already existing any better.

2. All fractured molars and bicuspids are 100% lost teeth to Hon. Patient who experiences them.

3. Accurate diagnosis of complicated case is often extremely difficult even when undertaken by brightly intelligent Dentist resembling present Hon. Boss for somewhat equally intelligent patient similar to myself.

4. Finally, extensive life experience has several times induced events of highly tragic nature, including deaths of Hon. Parents, dearest friends, bitter disappointments and other assorted etc of mental anguish. On several occasions disposition has been present to remark, "Experience now going on is absolute limit of possible affliction." In all honesty Mr. Editor I desire to offer following amendment to expression and impulses just alluded to. Physical pain in unlimited quantities and sufficient duration is still undisputed grief champion of mundane universe.

Hoping you are the same,

Togo.

DETROIT FOR YOU

By Pat J. O'Reilly, D.D.S., President, Detroit Dental Society

The meeting of a century! Well has it been named. For more than fifty years the dentists of Detroit and Michigan have been issuing the invitation. That it has finally been accepted is a source of gratification and pleasure. Detroit is a wonderful convention city and this year you are promised a particularly attractive program.

With the meetings all under one roof and on one floor much confusion can be avoided. The largest office building in the world has been selected as the meeting place.

Our annual conventions are really educational. This year you will find a whole post-graduate course in one week. The keenest minds and ablest technicians will be with us. The number of exhibitors will exceed that of any previous meeting.

There will be, as you know, upwards of 10,000 kindred spirits in attendance. You will want to meet your old friends and make new ones. Or this may be your first National Meeting. If so, you will want to make the contacts that broaden the mental horizon.

Detroit is just across the river from Windsor, Canada. This is your opportunity to visit our northern neighbor. Steamer ferries that transport upwards of 500 automobiles in an hour offer uninterrupted transportation.

Detroit stands ready to welcome you. If you are within driving distance and plan to motor to our city, you will find one of the best provided sections of the United States in the matter of paved highways.

Michigan has the oldest State organization in the Union, and Detroit a very progressive district dental society. When you arrive in the Automobile City, you will find every member, from the youngest to the oldest, anxious to greet you in the true spirit of professional brotherhood.

Come to Detroit! You will go away rejuvenated—happier and wiser for your visit.

DENTAL ECONOMICS

What Price Dentistry?

By Louis Wack, D.D.S., New York, N. Y.
Chief, Dental Department, Cornell Clinic

In dentistry, as in every profession and business, there is a decided tendency on the part of the community as a whole to center its thoughts and concentrate its purposes on the details of the moment. A perspective view of the general trend of the profession is thus lost until suddenly some unusual circumstance arises to give us a jolt, arousing us from our mental astigmatism. We then gaze about in confusion, marveling at the distance we have strayed in our somnambulism and at the unpleasant surroundings into which we have inadvertently wandered.

A circularization of the profession by several exodontists naming definite and inordinately low fees for certain operative procedures is the jolt that should now cause us to awaken from our lethargy, rub our eyes, and take cognizance of the rut in which we have been traveling as regards the financial remuneration we are receiving for our good services. I say *"good* services" advisedly, for it is clear to me that the first step to be taken is the education of dentists themselves as to the really great value of dentistry. We ourselves have been cheapening ourselves and our work.

A relatively high financial remuneration means advantage to the patient as well as to the dentist. Polishing and sterilization of each instrument after each use takes time, and time represents an outlay of money. It is expensive to change the napkin upon the bracket table after each patient, to give each patient a clean cup, napkin and saliva ejector, to use only gauze and applicators that have been sterilized by steam pressure. It costs money to be invariably spick and span in a clean, starched uniform, neatly pressed suit and shined shoes. Steady hands and quiet nerves presuppose sufficient rest and recreation which necessitate monetary outlay. Unreasonably low fees preclude the possibility of affording patients these niceties when they undergo dental treatment.

A cheap dental restoration must of necessity mean cheap, hurried,

unclean dentistry. This, to my mind, is worse than no dentistry at all, merely giving the patient a false sense of security regarding dental organs which may be undermining his health and actually endangering his very life.

The selection of a dentist on the basis of price alone is positively revolting to the intelligence of every fastidious patient. There can be no doubt about the fact that laymen realize that cleanliness, carefulness, skill and unhurried attention to detail are worth while, and patients look for these attributes in a dentist before giving a thought to the probable cost of dental work.

There must never be financial competition among dentists. Each man should adjust his fees exactly as he sees fit, with no thought as to what the next dentist gets for his work. The fundamental requisite of any fee is that it should be sufficient to enable the dentist to do the work well.

The difficulties attendant upon doing satisfactory dental work are so great that the layman will never be made to appreciate them fully. The failure of a piece of work is more often than not blamed upon the operator and not upon the faulty conditions that he was forced to accept as a foundation for his work. It will thus readily be seen that dentistry will always be more or less at a disadvantage in gaining the confidence of the laity as a whole.

Have we, in view of these conditions, done our best to uphold our profession by praising our fellow dentists and their work? I am ashamed to say that, instead of educating our patients as to the difficulty in making even the simplest dental restoration a satisfactory one, we have allowed ourselves to criticize one another's work adversely and have even fallen so low as to attempt to inveigle our brother dentist's patients away from him by making our prices lower than his.

Fellow-workers in the most wonderful profession in the world, give thought to what you do! Realize, please, that every unkind word against a brother dentist is an unkind word against *dentistry*—in other words, against yourself. Realize, please, that the patient you steal from your fellow dentist by quoting inordinately low prices will, in turn, be stolen from you! Where will all this end? Where can it end, except in dragging our profession into commercialism, making us despised peddlers, haggling in our endeavor to pull down everything that is good? What a shameful prospect for a young, vigorous profession, which with a little thought and prudence can rise to a high and honored place among the various callings!

Let each of us promise himself that he will thoroughly and definitely take up cudgels with the next patient who presents himself with a complaint as to the way a previous dentist "ruined my teeth"! Don't stand idly by and allow your brother dentists to be maligned!

Defend your profession! A boost for the other fellow is a boost for dentistry and for yourself!

You will attend many social gatherings at which some pompous, self-important person will say to you in the presence of others, "Doctor, some dentists are robbers! The man who inserted this inlay of mine charged me thirty dollars for it!" Make up your mind right now that you will not be a jellyfish and a "yes man." Determine that you will look that choleric, pompous gentleman squarely in the eyes and, in a dignified manner, say to him: "Mr. So-and-so, that may sound like a large sum at first thought, but I am a dentist and I know that good dentistry is one of the most important, valuable things in this life and is well worth everything that any man can pay for it." Following the gasp of surprise that will permeate the gathering at the very thought of a dentist having the temerity to uphold his profession, you will note a new respect for you in the attitude of the listeners. If you want to have people know that dental work is valuable, you must tell it to them—and tell it to them often!

Sometime ago I attended a clinic given by a clever young exodontist. The dentist sitting next to me muttered: "I used to send him patients, but now I don't any more. Why, he thinks nothing of charging ten or twenty dollars!" The work for which this colossal (?) fee was charged was not definitely stated, but the attitude expressed by this disgruntled young man is exactly what we must pull out of dentistry by the roots. Instead of forcing each other down, down, down, until dentistry is something hurried, slipshod and cheap, we must lift and push each other up. Our attitude must be, "Yes, our fees are high, but what of it? Our work is well worth it!" And don't criticize the other fellow!

Remember, a boost for a dentist is a boost for dentistry, and for yourself!

2877 Concourse.

PRACTICAL HINTS

This Department is now being conducted from the office of The Dental Digest. To avoid unnecessary delay, Hints, Questions and Answers should be addressed to Editor Practical Hints, The Dental Digest, 220 West 42d Street, New York, N. Y.

NOTE—Mention of proprietary articles by name in the text pages of THE DENTAL DIGEST is contrary to the policy of the magazine. Contributions containing names of proprietary articles will be altered in accordance with this rule.

Editor, Practical Hints:

I have had several cases of swelling after extraction. Some of the teeth extracted were vital teeth, and some were infected. What would be the probable cause?

I use novocain put up in capsules.

Some of the patients operated on were afflicted with tuberculosis in a mild form. Would that have anything to do with it?

What treatment would you use to relieve the condition?

C. R. T.

ANSWER.—I should suspect a break in the chain of asepsis as the cause of swelling following extraction.

You will get some swelling in a certain proportion of cases, but where it follows almost every case, including vital teeth, it would seem that there must be infection. The fact that the patient has pulmonary tuberculosis probably would have nothing to do with the condition. I should suggest a very careful going over of the chain of the asepsis from the preparation of the mouth and needle to and through extracting, instruments and forceps, cotton, your own hands, the novocain solution and, in fact, everything in connection with the operation.—G. R. WARNER.

Editor, Practical Hints:

I have a patient, female, about 35 years of age, of fine physique, who seems to require a filling in her teeth almost every month. The gingival edges of all the anterior teeth are white and eventually break

through. She eats very little "sweets" and not much meat, but has gall bladder trouble.

What I should like to know is (1) how we can arrest this decay, and (2) what filling material is indicated in these gingival cavities.

E. W. H.

ANSWER.—You have asked a question which has perplexed the whole dental profession since the profession has been interested in causes. It would seem that we are getting some light on this now from the investigations of Howe, Marshall, McCollum, Mellanby and others.

It would seem that this rampant decay is not merely the result of local conditions, but is associated with disturbances of metabolism. I believe in the case you present that this is probably associated with the gall bladder condition, therefore it would be wise for you to cooperate with the physician in charge of the case, with the idea of raising the percentage of calcium and other mineral salts of the blood.

I think that until you find the decay is arrested, it would be wise to use silicate cements in the gingival third cavities of the anterior teeth. These fillings would probably last a year or two, when you will know whether they are worthy of baked porcelains.—G. R. WARNER.

Editor, Practical Hints:

I am puzzled by a case of acute gingivitis, the cause of which I cannot find.

The patient is a girl of 18. The gums are greatly inflamed and very tender to the slightest touch. It seems that the gums have covered the teeth in an abnormal manner, so that in some places I can extend the explorer beneath the margin for a quarter of an inch.

I am reasonably sure of excluding the following causes: salivary calculus, serumnal calculus, abnormal occlusion, abnormal contact.

What can you suggest as a cause or treatment?

M. S.

ANSWER.—Your case of gingivitis, and I suspect also hypertrophy, can be accounted for, besides the reasons given in your letter, by abnormal diet, by overdoses of drugs such as iodine, and possibly by vicarious menstruation.

To test out the matter of diet, you can put the patient on an orange-juice diet for four or five days, followed by a diet restricted in starches and proteins for a period of a few weeks. A liberal use of oranges, other fruits and green vegetables is probably indicated as a permanent part of the diet. Of course, the other matter mentioned should be checked up.—G. R. WARNER.

Editor, Practical Hints:

Could you kindly give me the name of the modified Phosphoric acid which I desire to order in bulk from a pharmaceutical house as the liquid for my cement powders?

Made a mix using C.P. phosphoric acid and found the heat reaction terrific.

L. F.

ANSWER.—The type of phosphoric acid used in the mixing of ordinary cement powder is the anhydrous phosphoric acid.—G. R. WARNER.

Editor, Practical Hints:

A boy five years old has very poor dentition. All his upper anteriors and several posteriors, upper and lower, are badly decayed. At present he has the entire deciduous set, but will undoubtedly lose some prematurely. He eats oranges, spinach, carrots, etc., and drinks milk quite freely.

I should appreciate suggestions on the deciduous set, and also anything that will help to insure a normal permanent set.

I. L. C.

ANSWER.—Aside from fillings which are indicated in the molar region, I believe the use of powdered silver nitrate is indicated for decay in the teeth of a five-year-old child. It is almost impossible to fill anterior teeth without involving the pulp, and repeated applications of silver nitrate will usually control the decay and insure the retention of the teeth reasonably near to the normal time for exfoliation.

Aside from keeping all vital temporary teeth in place as long as possible and everything being done for the health of the child in the way of fresh air, sunshine and right food, I know of nothing that will help to insure a normal permanent set of teeth.—G. R. WARNER.

Editor, Practical Hints:

I made an upper denture lately for a patient about 40 years of age. Since she has been wearing it, her saliva has become very thick and ropy, and in removing the plate there will be a string of saliva hanging to the heel of the plate the full length of your arm.

Will you kindly inform me how to overcome this disagreeable feature?

R. E. P. W.

ANSWER.—Thick, ropy saliva can be corrected by regulation of diet. Such a patient should reduce very radically the carbohydrate ingredients

of her diet. Let her confine herself largely to fresh fruits (preferably citrus fruits) and fresh non-starchy vegetables, with a liberal proportion of uncooked foods, lettuce, cabbage, tomatoes, cucumbers, etc.—V. C. SMEDLEY.

Editor, Practical Hints:

Patient, middle age, has worn a temporary upper denture too long and his mouth, both buccally and labially, contains much loose flabby tissue.

Can you describe the method of removal or direct me to literature on the subject?

W. F. R.

ANSWER.—If this loose, flabby tissue is over the crest of the ridge, it should be removed by making two converging incisions, thus removing a V- or wedge-shaped strip of excess tissue. The two incised surfaces in the mouth should then be drawn together and held in apposition with the sutures to provide for a quick knitting with a minimum after-discomfort from exposed, excised surfaces.

If the loose flabs of tissue are high up where the periphery of the plate has cut in, I think it is usually unnecessary to remove them, as I find that they will gradually absorb and disappear if a new denture is made with a much shorter, smooth, rounded edge, adapted closely to what remains of the ridge, instead of projecting up into these folds of flabby tissue.—V. C. SMEDLEY.

Editor, Practical Hints:

A boy 7½ years old has a habit of grinding his teeth at night. In fact, a half of his deciduous teeth are worn off.

What shall I do to stop it?

A. L. R.

ANSWER.—Grinding the teeth at night is usually the result of some disturbance of the nervous system, especially when it occurs in children. I should, therefore, advise that you consult your family physician or a pediatrist.—G. R. WARNER.

Editor, Practical Hints:

I am trying to remedy a case for a little girl 9 years old. Her mother brought her to me a few days ago, and the girl had some time ago had the misfortune to break off her upper left central. It was painful and looked dark. I x-rayed it, found it abscessed, and extracted it. They want the tooth replaced.

Please tell me the best way to replace this tooth. If it was a grown

person, I should know what to do, but with a child of this age, and for well-to-do people who are very anxious to do the very best they can for their daughter, I should like to have your advice.

M. E. S.

ANSWER.—My advice in this case is that you solder a bridge facing to orthodontia bands, well fitted to the adjoining central and lateral. This appliance can be cemented to place, as orthodontia appliances are, and removed occasionally for prophylaxis and examination of the tooth surfaces.

Such an appliance can be kept on for several years until the teeth have reached their maturity, or until in your judgment it is perfectly safe to place a permanent bridge.—V. C. SMEDLEY.

Editor, Practical Hints:

I should greatly appreciate an answer to the following:

I have a patient, male, about 37 years old, whose upper teeth were extracted a year ago. I made a temporary plate, which he used about nine months, as long as could be expected for a temporary plate. I then made a permanent plate, which fitted very snug, with good suction and articulation. The plate worked very well for two weeks, then would drop at the least provocation. I have made three plates since, all with the same results.

W. F. M.

ANSWER.—If you are sure that these plates have not been over-extended to produce a muscle tension which is responsible for their loosening and dropping, and if you are sure that you have a balanced occlusion or articulation, i. e., that the patient cannot rock or tip the plate in a way to break the suction by any excursion of the jaw with the teeth in occlusal contact, then it is possible that there is nothing further that can be done in the way of fitting the mouth any better with a plate, and that all there is left to do is to instruct the patient in the best way to manipulate them and get along with the plates as they are.

I have seen a good many patients learn to manipulate very loose plates and get along admirably with them. You must instruct them always to press inward and upward upon the front teeth when biting or incising a piece of bread or apple or whatever morsel of food they may be eating. Then they must learn also to chew with the food divided with as nearly as possible an equal proportion on both sides of the mouth at the same time.—V. C. SMEDLEY.

Editor, Practical Hints:

I am enclosing a cast covering the superior left lateral cuspid and first bicuspid of a patient, a clergyman, about 42 years of age. You will note the erosion on the cuspid, with a very slight tendency in that direction on the lateral. What would you advise me to do to this cuspid to restore it? As yet there is little sensitiveness present, just a little from sweets. I do not find evidence of erosion in any of the other teeth. The other teeth are much better than are usually found in the average mouth.

What do you consider the underlying cause of such a case of erosion?

W. H. T.

ANSWER.—The best way to restore this eroded cuspid to normal would be with a baked porcelain inlay, especially if the patient shows his teeth much in speaking. If, however, the appearance is not objectionable, either a gold foil or a gold inlay could be used to advantage.

I think you will find upon investigation that this man has a toothbrush habit of somewhat prolonged horizontal stroking across this cuspid region. He should be taught to do more, if not all of his brushing from a position high up on the gum toward and past the incisal position. There may, of course, be some chemical action taking place also, but it is strange, if it is chemical erosion, that it should be attacking only these two teeth.—V. C. SMEDLEY.

CORRESPONDENCE

Massillon, Ohio.

Editor, THE DENTAL DIGEST:

We are enclosing an x-ray of an impacted lower right third molar which may be of interest to your readers because of its unusual root formation.

The acute angle emphasizes the necessity for x-ray survey of all such cases before extraction.

A. P. GARDNER.

Lisbon, N. H.

Editor, THE DENTAL DIGEST:

I am enclosing a print of a lateral view of a jaw which may be of interest to readers of THE DIGEST.

Patient, male, 26 years old, gave history of having first molar extracted five years ago. Examination showed pus oozing from two places in gums, one opening buccally and one lingually. Flow of pus was greatly increased upon pressure of finger. I suspected an old root, but x-ray showed unerupted second molar with end of distal root nearly at right angles to long axis of the tooth.

The second bicuspid, being loose and without much support distally, was removed, after which I chiseled considerable process from all four sides of the molar, particularly distally, and removed the tooth with slight pressure of a straight elevator. The third molar was undisturbed.

The end of the roots show a distinct groove and evidently rested

upon the mandibular nerve, and there was a decayed area on the occlusal surface. The patient naturally has no feeling in the lower jaw as yet and probably will not have for a few months.

Also notice the supernumerary tooth distal to the upper third molar.

C. F. GODFREY.

DENTAL SECRETARIES and ASSISTANTS

Secretaries' Questionnaire

All questions and communications should be addressed to Elsie Pierce, care of THE DENTAL DIGEST, 220 West 42nd Street, New York City.

NOTE—HAVE YOU A BETTER WAY? HAVE YOU A TIME-SAVING SHORT CUT? DO YOU KNOW A "STUNT" THAT LIGHTENS THE WORK OR MAKES FOR EFFICIENCY IN THE OFFICE? IF SO, WRITE TO ELSIE PIERCE, CARE THE DENTAL DIGEST, 220 WEST 42ND ST., NEW YORK. YOU MAY HELP A NUMBER OF GIRLS WHO ARE JUST BEGINNERS—AND YOU KNOW HOW YOU NEEDED HELP DURING YOUR FIRST FEW MONTHS IN A DENTAL OFFICE. OR IF YOU NEED HELP NOW WRITE TO ELSIE PIERCE—SHE'LL HELP YOU.

Dear Miss Pierce:

I have been employed as general assistant by a dentist in a small town in Ohio for the past three years. I do all the secretarial work, assist at the chair, and help with the x-rays and laboratory work. We have a cleaning woman twice a week; the rest of the time I keep the office in order. I started at $10.00 a week, after one year my salary was increased to $12.00, and the past year I received another increase of $2.00, so that I am now getting $14.00 a week. I received these increases only after speaking to the doctor several times, yet he has told me many times that my services are invaluable to him and has made that statement to a number of the patients also.

The salary I receive does not meet my actual needs, and were it not that I live at home, where I pay a very small contribution toward my board as compared to what I should have to pay were I forced to live elsewhere, as are many self-supporting women, it would not be sufficient for me to live decently. Why do dentists think that an assistant can live on less than any other person who has to earn a living? There are several dentists in town and I have talked with some of the other assistants, and each one has complained of the poor remuneration in that line of work. We have been comparing notes and conclude that it would pay better to work as a servant than to try

to fulfil the requirements of professional service. Do you not think I should be justified in seeking another occupation and position, if I cannot get more salary?

I shall appreciate your answering this letter frankly, for I believe there are many other girls who are in the same quandary. The *Questionnaire* has helped me a great deal.

A. R., Ohio.

ANSWER: The question of remuneration for service rendered depends on many factors. It is impossible to say just what your salary should be without knowing something more about the details of the dental practice in which you are employed. In large cities $14.00 a week would scarcely buy the food you eat. You must decide for yourself what your income should be in order for you to live comfortably and decently and have a margin for a rainy day. Whether you seek another position must depend on the success you have in asking for an increase in salary.

It is a pity that there are dentists who do not consider the services of an assistant worthy of a servant's hire, which in these days amounts to more than $14.00 a week. Besides, a servant's maintenance is always included, thus perhaps more than doubling the actual cash wage. It is also to be deplored that some dentists should think that another man's daughter or sister is able to live decently on less money than would be required by a member of his own family. The type of assistant that most dentists require is a young woman of culture, quick of perception, intelligent and tactful. These qualities are worthy of a compensating wage, no matter where employed, and individuals possessing them are usually able to find employment in any line of endeavor.

In order to help solve your problem, may I suggest the following:

Outline a working budget of your necessary expenses, such as the cost of room and board; clothing, including only necessary clothes in season; indispensable toilet articles; laundry; carfares; medical and dental service. To this list add something for incidentals, such as church fees, society dues, educational fees, books, lectures, classes, etc., amusements.

If you will divide the budget thus estimated for one year by the number of weeks, you will quickly find the amount necessary to cover actual expenses each week. To work for a salary that will not meet this is only an evidence of poor judgment, be it in a dental office or anywhere else.

To the above—and this is very important—after all necessary expenses have been paid, there must remain a surplus, be it ever so

small, that can be applied to a savings account against future needs. Woe betide the girl who has no ready funds at hand in case of emergency!

Dear Miss Pierce:

Perhaps *M. P. of Canada* would like to try my way of removing water spots from a mahogany unit. Make good soap-suds and use with a soft piece of cloth (I prefer gauze). Wash a small space at a time and dry quickly, then polish.

Like many others I anxiously await THE DENTAL DIGEST each month. I have been in a dental office only a few months and there are so many things that I do not know. The items in your department have been a great help to me.

I. E. S., Minn.

Dear Miss Pierce:

I offer a suggestion in return for the many I have received.

Secure a half-dozen plain glass salt-cellars to hold cleaning materials for prophylactic treatments. If no special materials are used, a teaspoonful of flour of pumice and a quarter of a teaspoonful of bicarbonate of soda make a good mixture for each container. At the time of using, add a few drops of water and a small quantity of pleasant-tasting tooth-paste to flavor. These containers are inexpensive and, when prepared as suggested, are always ready.

M. Q., N. Y.

American Dental Assistants Association

It is the desire of the officers of the American Dental Assistants Association to communicate with every dental assistants' organization throughout the country, in order that all dental assistants may be brought in contact with the society in their respective localities. Inquiries for such information are often received.

It is also desired to send to the various societies literature and other data of interest. The American Dental Assistants Association wishes to cooperate in every possible way with all dental assistants' societies and in this spirit of cooperation and friendship solicits the interest of the officers of the various organizations. Its object is strictly educational and its purpose is to aid all dental assistants to render better service to the dental profession. Its watchwords are Education, Efficiency, Loyalty, Service.

A cordial invitation is extended to the non-affiliated societies to

attend the Third Annual Meeting of the American Dental Assistants Association at Detroit, Mich., Hotel Savoy, October 25-27, 1927. All dental assistants will be welcome. There will be interesting programs, clinics, luncheon, etc. Come and make the acquaintance of others who are in the same field of activity! The inspiration derived will justify the effort.

JULIETTE A. SOUTHARD, *President*,
174 West 96th St.,
New York, N. Y.

MAUDE SHARPE, *Genl. Secy.*,
Suite 1202, 8 West 40th St.,
New York, N. Y.

Dental Assisting in the Small Town*

By Mabel M. Carithers, Princeton, Indiana

How readily we use our imagination and form opinions of both subjects and people without just cause! I wonder how many dental assistants here have visited a dental office in a small town and really know the requirements of an assistant employed there. Yet how easy it is for each of us to think the other has "a snap"!

In a town of about 10,000 people there are five dentists, all ethical practitioners. One of these employs an assistant, who, I suspect, is considered a pioneer, having been in the profession over twenty years. The other dentists at various times have employed young women who worked from one month to possibly three years, or, in other words, have here bridged the time from graduation to marriage.

Twenty years ago we had no local, state or national dental assistants' association, yet the assistant who preceded the present one, in the same office but with another dentist, was employed eleven years, and through the training of her dentist-employer was a wonderful assistant, not merely an office girl answering the telephone, etc., but hostess, chair assistant and secretary. She sterilized all the instruments, assisted in administering nitrous oxide, scaled and polished teeth, treated and extracted children's teeth, etc. She had no time for embroidery, as seems to be the impression, but had all the duties of the present assistant employed by a dentist with a general practice, as is the custom in the smaller town.

With the training under the dentist's direction and in working out "our own salvation," we cannot help but envy the assistant in the city when we learn of the local organizations there, the various classes of the Educational and Efficiency Society of Dental Assistants in New York, and the Indianapolis girls telling of their interesting meetings, but

* Read before the annual meeting of the American Dental Assistants Association, Philadelphia, Pa., August 20, 1926.

we are 150 miles from Indianapolis. We wonder if the girls fully realize what a benefit these meetings are and appreciate the knowledge that they may obtain.

Let me take those of you who have never visited a dental office in a small town on a tour to offices that I have seen.

First, let us visit an office in Craig, Col., at the end of the Moffat Railroad. The reception room, operating room and laboratory are all in one, and spotlessly clean. Electricity is the only modern convenience. All water is carried in and out. Anesthetics are not used on account of the altitude, the greater part of the work being extractions and artificial dentures. Poor dentist! He surely labors under difficulties, but he is located there on account of the health of his child. I was glad to have the opportunity, while visiting there, of assisting in a few cases of extraction, for you all know the nervous strain which seems a necessary part of a visit to a dentist. The manner of the tactful assistant should always be governed by the temperament of the particular patient, since each person requires a different method of approach, and, as "variety is the spice of life," so is it the relief from monotony in the office.

Next we will visit an office in a small town in Illinois. On entering the reception room we find a floor covered with a dark, worn linoleum, sadly in need of a janitor, maid, assistant, or some one with a mop and dust-rag, paint and varnish. On the wall hangs a glass case with samples of various sorts of gold crowns, bridges, partial and full dentures, etc. This certainly is very uninviting in a dental office. The operating room is also decidedly uninviting, with the bracket full of instruments, cotton pellets on the floor, etc. Electric lights and running water seem to be the only convenience. The dentist even uses a foot engine. This description is not exaggerated. I actually visited this office with friends who had the utmost confidence in this dentist and seemed surprised when, after leaving, I expressed my disappointment.

I have visited also offices in cities of various sizes simply to obtain ideas of arrangements and conveniences, but I shall not take you with me on these trips, as no doubt you have all had much better opportunities to see the better furnished offices than I. However, I will ask you to visit the dental offices in our town.

You will find them rather similar in equipment and arrangement. The reception room is clean and attractive and as comfortable as a living room in a home, with rugs, draperies and living room furniture, good magazines on the table, the daily newspaper, and absolutely free from signs of a dental office.

Here we are met by an assistant, properly attired in a clean white apron (twenty years ago she had nurses' blue uniforms with white

collars, but they were uniforms, nevertheless). She receives you with the same gracious manner and courtesy as she would a visitor in her own home, asks your name and address, the nature of your business and, when possible, attends to the matter herself.

In the operating room you will find the bracket clean and free from instruments, the cuspidor spotless, and, as the patient sits in the chair, clean covers are put on the headrest, which is adjusted to the patient's comfort. A clean towel is placed about the patient's neck, and a drinking glass taken from the cabinet with fresh water for the patient. The doctor is then introduced and told the nature of the call. During the operation the assistant mixes cements, amalgams, artificial enamel, etc., and prepares wax, plaster or compound for impressions.

I might add here that we have long since learned that no two dentists require the same assistance, and in time we learn to understand the doctor's own particular technic in operative procedure.

At the end of the operation all instruments are promptly removed, washed and placed in the sterilizer. The chair is quickly put in order for the next patient. The patient is once more in the hands of the assistant. If a general anesthetic has been given, and the clothing loosened or changed (we have the patient put on an operating apron), she helps the patient adjust her clothing and takes her to the retiring room, where the assistant is nurse until the patient leaves, advising her as to home remedies according to the doctor's directions.

Of course, the assistant has long since learned the art of taking care of the telephone, and the secretarial duties are not to be overlooked. She also is ready to assist, both in the office and in the local hospital, in oral surgery, such as broken jaws (both upper and lower), bone grafting, antrum cases, removing necrosed bone, impacted third molars, etc. In the laboratory she pours up investments, casts inlays, packs and vulcanizes plates, etc.

The assistant in the smaller town is supposed to know everybody, as she is usually reared in the community. This is often quite embarrassing and tact must be used to meet the occasion.

Small towns, as you know, depend a great deal on the rural community for a livelihood. Often during the summer months the assistant is required to open the office at 7:00 a. m. As the railroad shops close at 4:00 p. m. and stores at 5:00 p. m., closing time, in the office, comes when we are through working, and we always keep open Saturday until about 11:00 p. m., although in the evening we do only relief work, never permanent work.

This office consists of reception room, operating room, laboratory, developing room and dressing or rest room. It is heated and has hot and cold running water and janitor service, but the assistant must be

sure that everything is kept in order, that soiled linen is sent to the laundry, and that supplies and materials of all kinds are kept in stock.

For the benefit of those who do not have built-in cabinets and are not near a dental depot, which necessitates the carrying of a rather large stock of supplies, I have found a white, 30-inch kitchen cabinet (kitchenette size) a most convenient addition to our laboratory for storage.

The equipment of this office is modern, consisting of two chairs, one for operating and one for x-ray, extraction and taking impressions. There are electrical devices, compressed air, gas machine and x-ray, not forgetting the necessary electric fans, for often during the summer the thermometer stands at 100 in the laboratory.

As far back as twenty years ago, real porcelain inlays, baked in an electric oven on platinum impressions, were made in this office, and quite a number of patients in this community still have the pleasure of wearing them.

As an assistant in a small town for over twenty years, I find it a pleasure to talk to Community Clubs and Parent-Teachers' Associations on preventive dentistry; the effect of foods on tooth structure, before and after birth; the importance of the six-year molar, and also help in the school work with the Red Cross Nurse.

Sometimes I wonder if there is a vocation in life so wonderful for developing patience, perseverance, and unremitting attention to detail as dental assisting. Were it not for the many pleasant features of daily practice overbalancing the unpleasant, sometimes our work would be almost unbearable.

Love for our work is half the battle, and, after all, isn't it a satisfaction to know that one is doing one's best for the greater happiness of fellow human-beings by helping relieve or prevent pain?

EXTRACTIONS

No Literature can have a long continuance if not diversified with humor—*ADDISON*

All the old-fashioned people aren't dead in this country. Every now and then somebody steals a horse.

Ambassador Herrick showed rare judgment in returning to America before these flights reached the community hop stage. There is a limit to the number of pajamas any man can spare.

GETTING BACK TO NORMALCY

A sign in a big department store reads: "Ladies Ready to Wear Clothes."

(Mother)—Bessie, I was delighted to hear you say your prayers so nicely tonight. You are a real good little girl.

(Bessie)—Aw, that's nothin', Mom. Wait until you hear me gargle!

Grit is a good thing in every way—except in spinach.

Johnny, 10 years old, applied for a job for the summer, relates a college paper. The grocer wanted a serious-minded youth, so he put Johnny to a little test. "Now, tell me, my boy," he said, "what would you do with a million dollars?"

"Oh, gee, I don't know," replied the youngster. "I wasn't expecting so much at the start."

TRUE LOVE

(Charlie)—Why do you call this a map of the world? I thought it was a photograph of your sweetheart.

(Clarence)—It is. She is all the world to me.

If all the autos in the world were laid end to end, it would be Sunday afternoon.

If the lamb tried to follow Mary today it would most certainly have to step on the gas.

(Mother)—Robert, you're a naughty boy. You can just go to bed without your supper.

(Bobby)—Well, mother, what about that medicine I've got to take after meals?

Three girls went out a-riding,
Two came walking back;
The joke is on the reader—
The third girl owned the hack.

Clothes make the man, lack of them the woman.

If there were no movies or no opera where would people go to talk?

It doesn't matter where we ramble,
It never pays to stop and gamble
With dirty milk or dusty fruit;
Nor does it pay to pet the poodle
That has rabies in his noodle—
There's the Pasteur Institute.

WISDOM OF THE ANCIENTS

I am an old man and had many troubles, but—the most of them never happened.

THE HERO'S REWARD

Fly over the ocean,
The mountains, the flats—
And you will be fêted
By men in silk hats.

Pierce regions uncharted,
Brave death in the seas—
And you'll be proposed to
By girls with odd knees.

Accomplish an air trip
Without any stops—
And you will be trampled
By horses and cops.

Gain glory no other
Man ever quite got—
And when you have gained it
You'll wish you had not.

WELL, WELL! ANOTHER NUT

In the will of a Paris Marquise who died recently the following item appeared: "A three-carat diamond is hidden in my second molar at the left. Remove the tooth before burying me." It appeared to have been hidden there for years.

A picnic basket underneath the bough,
A bunch of happy hooligans at chow,
In one brief hour can make a Paradise
Look strongly like the other place, somehow.

Many of us have reduced it to life, liberty and the pursuit of golf balls.

FUTURE EVENTS

THE ALUMNI SOCIETY OF THE DEWEY SCHOOL OF ORTHODONTIA will hold a scientific meeting at the Hotel Vanderbilt, New York, August 29-31, 1927. These three days will be devoted to a scientific program, and the remainder of the week will be taken up with clinical demonstrations and the design and construction of appliances.

The following papers so far have been secured for the program:

A Resumé of Four Years of Study at the Good Samaritan (Endocrine) Clinic, With Special Reference to Eight Hundred X-Ray Hand Pictures and Their Relation to General Bone Progress.....Clinton C. Howard, Atlanta, Ga.
A Critical Analysis of Gnathostatics in Orthodontia,
Abraham Wolfson, East Orange, N. J.
Mental Orthodontia—Its Stimulants and Depressants,
Russell E. Irish, Pittsburgh, Pa.
Orthodontia of Deciduous Teeth.....Albert C. Holzman, Boston, Mass.
Comparative Anatomy.....Herbert I. Margolis, Boston, Mass.
A Review of the Literature Pertaining to the Influence of Habits in Orthodontia,
Moe B. Markus, Philadelphia, Pa.
Two Examples of Basic Maldevelopment in the Denture,
Bernard L. Hyams, Montreal, Can.
Physical Consideration Concerning the Alleged Stability of Bone and Similar Structures.....Samuel E. Pond, Univ. of Penn.
A Study of Histological Changes of the Bone As the Result of Tooth Movement in the Teeth of Dogs.....Martin Dewey, New York

The following series of lectures will be given by Homer B. Robison of Great Bend, Kansas:

Abnormal Muscle-Functioning—Its Effect on Orthodontic Treatment
Human Types—Normal and Abnormal
Endocrines—Their Effect on the Osseous, Genital and Mental Development and Its Relation to Orthodontics
Some Erroneous Diagnoses of Acromegaly

Clinics will be given by the following:

Irving Spenadel.....New York
Paul Geoffrion.....Montreal
A. V. Greenstein.....New York
Harry E. Abelson.....New York
Bercu Fischer.....New York
Harry A. Holder.....Nashville, Tenn.

A more complete program will be issued at a later date.

PAUL G. SPENCER, *President*,
Waco, Texas.

HARRY A. HOLDER, *Secretary*,
Nashville, Tenn.

UNIVERSITY OF TORONTO, FACULTY OF DENTISTRY. Annual Course for Dental Practitioners, Sept. 12-17, 1927.

Ethical practitioners will be afforded the opportunity of spending one week in the intensive study of practical problems encountered in modern dental practice.

The courses offered are: *Clinical Dentistry and Diagnosis; Dental Surgery and Anesthesia; Preventive Dentistry; Orthodontia for the General Practitioner; Business Management; Periodontia.* Among the men giving the courses are Drs. W. E. Cummer, A. E. Webster, Harold K. Box and Wallace Seccombe.

Further information may be obtained upon application to the Secretary, Faculty of Dentistry, 240 College St., Toronto 2. Lists close on August 20, 1927.

THE AMERICAN DENTAL LABORATORIES ASSOCIATION will hold its Sixth Annual Meeting at Fort Wayne Hotel, DETROIT, MICHIGAN, October 24-25, 1927.

MONDAY, OCT. 24

9:30 A. M. Meeting called to order

9:30 A. M. President's Address.....Charles K. Summersby, St. Louis, Mo.

10:00 A. M. *Cooperation Among Laboratories*.....George Roth, Pittsburgh, Pa.
Discussion,
Charles E. Davis, Dayton, Ohio; Harry G. Rockey, Detroit, Mich.

11:00 A. M. *Taking Chances on Doubtful Preparations and Designing, Resulting in Make-Overs and Disagreements*.....I. J. Dresch, Toledo, Ohio
Discussion,
Dr. Karl W. Knapp, Minneapolis, Minn.; Fred Arnold, Birmingham, Ala.

1:30 P. M. *Credits, Collections, Losses*.....J. M. Ehrhardt, Chicago, Ill.
Discussion,
Harry K. Fairbank, Boston, Mass.; W. T. Smith, Baltimore, Md.

2:30 P. M. *To What Extent Should We Guarantee in Order to Build up Confidence?*.....Louis Weinstein, New York, N. Y.
Discussion,
Eugene L. Mueller, Kansas City, Mo.; A. O. Eberhart, Atlanta, Ga.

3:30 P. M. *Are We Victims of Fear?*.....George Sternberg, New York, N. Y.
Discussion,
Dr. M. M. House, Kansas City, Mo.; Henry W. Kiess, St. Louis, Mo.

TUESDAY, OCT. 25

9:30 A. M. *Reasonable Advertising—Direct Mail, Journals, Salesmen, Teachers (Clinics)*.....Henry P. Boos, Minneapolis, Minn.
Discussion,
Samuel G. Supplee, New York, N. Y.; W. H. Schroll, Chicago, Ill.

10:30 A. M. *Manufacturers of New Products Expect Us to Pioneer, Boost and Guarantee. What Should Be Our Attitude?*.I. F. Miller, Pittsburgh, Pa.
Discussion.....J. C. Schwartz, St. Louis, Mo.

11:30 A. M. *Clinics for Our Clientele*.....Dr. W. S. Heermans, New York, N. Y.
Discussion.....George Sternberg, New York, N. Y.
Salesmanship.....Harry Bosworth, Chicago, Ill.

Everybody's Hour
Business Meeting
Golf

THE AMERICAN SOCIETY OF ORAL SURGEONS AND EXODONTISTS will hold its ninth annual meeting at Detroit, Michigan, October 21-22, 1927. Headquarters will be at the Statler Hotel.

FRANK W. ROUNDS, *Secretary,*
270 Commonwealth Ave., Boston, Mass.

The next meeting of the AMERICAN DENTAL HYGIENISTS' ASSOCIATION will be held in conjunction with the meeting of the American Dental Association in Detroit, Mich., October 24-28, 1927.

Dental Hygienists, make your plans now to attend this meeting!

ETHEL F. RICE, *Secretary,*
721 North University Ave., Ann Arbor, Mich.

THE AMERICAN DENTAL ASSISTANTS ASSOCIATION will hold its Third Annual Meeting at Detroit, Mich., October 25-27, 1927. General headquarters will be at Hotel Savoy, where all sessions will be held, and reservations should be made promptly. Railroad fares are at convention rates on the certificate plan. All dental assistants are cordially invited to attend this meeting. Dental assistants' societies not affiliated with the American Dental Assistants Association are asked to send representatives. For further information, address

MAUDE SHARPE, *General Secretary,*
Suite 1202, 8 West 40th St., New York, N. Y.

THE FIRST DISTRICT DENTAL SOCIETY, NEW YORK, announces its third *Better Dentistry Meeting* to be held at the Hotel Pennsylvania, New York, N. Y., December 5-7, 1927.

In conjunction with this meeting a dinner will be tendered Dr. William Dwight Tracy in recognition of his contribution and unselfish devotion to the profession.

Detailed information will be published later.